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Gleanings in Bee Culture

November, 1960 CONTENTS Vol. 88, No. 11

87 Years Continuous Publication by the Same Organization.

Monthly Honey Report ..... Walter Barth 645
Operations in North Dakota ..... David M. Noetzel 649
Good-will Marketing ..... Charles W. Gouget 653
Wintering Bees in Idaho ..... L. R. Budge 656
Learning the Hard Way ..... Ray Reinhold 660
Taking the Hard Work Out of Beekeeping ..... A. C. Askew 662
A New Use for Soil Heating Cable 664
Nobody Told Me ..... Ray L. McLester 664
A Footnote to "Preparation for Wintering" ..... F. Q. Bunch 665
The Battle of the Bumblebees ..... Harrison McElwaine 666
Traffic Control for the Hive ..... Leland A. Quindry 668
Research Review ..... Dr. Roger A. Morse 669
News Reel 670
Editorials 672
Live and Learn ..... Propolis Pete 674
Let's Talk about Honey Plants ..... Dr. Harvey B. Lovell 675
Cure for Robbing 676
Sweet and Sour ..... Mrs. Benj. Nielsen 677
Honeybees of the Amazonic Basin ..... Father David C.P. 678
What a Way to Advertise! ..... George I. Zetler 683
Ball Clover —Trifolium nigrescens ..... Gaden Perkins 684
A Survey of American Honeys ..... Jonathan W. White, Jr. 686
Talks to Beekeepers ..... M. J. Deyell 689
News and Events 690
Obituary 693

COVER PICTURE — The owner of this old homestead, near the close of another season, "when the frost is on the pumpkin and the corn is in the shock", can now, like the bees enjoy a brief respite from the arduous labors of summer.

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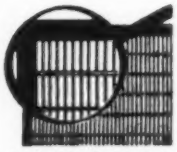

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Millard V. Coggshall, Chairman

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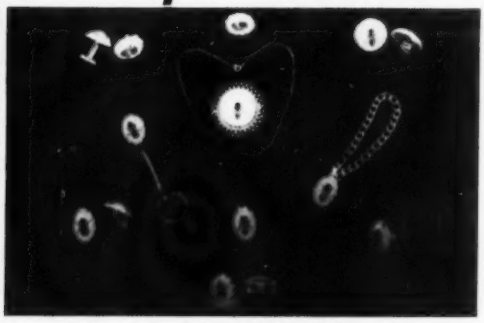

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Monthly HONEY Report

WALTER BARTH, Field Editor, San Antonio, Texas

IN VIEW OF the successful promotion resulting from "Folk Medicine" by Dr. Jarvis, it is unfortunate to read some bad publicity for the book. Such was the case when the noted medical column, "Keep Up with Medicine" appeared in the October issue of GOOD HOUSKEEPING magazine....a column read by thousands of homemakers. This column indirectly gives an adverse criticism of the book by Dr. Jarvis. The columnist could have let it go at that but unfortunately, he attacks honey itself, declaring that it is nothing but a mixture of sugar and water without special food value. It is reported to be almost lacking in protein and vitamins. The whole statement would, in my opinion, leave an uninformed reader with the idea that eating honey is a waste of time.

In view of these gloomy details, the improved honey market comes as pleasant news. Extracted honey is finding a good market and buyers are picking up available stocks very quickly. There is, however, a lot of honey still to be extracted. The legume honeys, like clover, are bringing top prices this year when comparing with the 1959 crop. Prices range from 13 to 15 cents per pound in sixties. It appears evident that temporarily, at least, the diverting of sugar quotas from Cuba has strengthened both sugar and honey prices. On the whole the beeswax market remains unchanged with only a moderate movement in beeswax.

On the retail scene honey sales are starting to pick up, and will probably continue this trend with cooler weather. Speaking of trends, there seems to be a greater use of the five pound square jar for extracted honey. In the past this container has always been accepted as a chunk honey item but now it is receiving greater favor as a replacement for the five pound round jar or pail.

A short time back mention was made in this column about a plastic container for potential mail order use. It is nice to know that the Superior Honey Company (Denver Branch) is working with the PLAX Plastic Corporation for possible use of this container. Numerous readers have written in for samples which are not mine to give. However, as soon as something is available a report will appear in Gleanings.

Retail Honey Prices

Size	Price
½ lb.	25¢
1 lb.	43¢
2 lb	79¢
4 lb.	$ .99* to $1.19
5 lb.	1.55 to 1.63

* Sale Price

Retail Honey Prices on Specialty Packs

Pack	Price
Comb Honey (24's)	$8 to $10
12-oz. Bud Honey Syrup	27¢
12-oz. Plastic Dispenser	47¢
1-lb. Glass Dispenser	59¢
½-lb. Calif. Orange Blossom	33¢
1-lb. 8 oz. Chunk Honey	58¢
12-oz. Honey Spread in Glass	37¢
10-oz. Honey Spread in Plastic	33¢
12-oz. Calif. Honey Spread in Glass	49¢
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Mr. W. A. Stephen of North Carolina reports on a good sourwood honey crop and that good prices are being received. Here is one of our nation's finest honeys....a competitor with the best. Other reports coming in point strongly to a very spotty national crop.

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JOHN A. ROOT, Business Manager.

Sworn to and subscribed before me this 19th day of September, 1960.

MARTHA M. BARGAR, Notary Public. (My commission expires October 5, 1961.)

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for Beekeepers
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An apiary

Operations In North Dakota

David M. Noetzel, Assistant Entomologist, Fargo, N. D.

In an earlier article (Gleanings, May 1958) R. L. Post described overwintering methods of an eastern North Dakota beekeeper. As Dr. Post points out this was one of a very few North Dakota folks who still cellar winter bees. Unmentioned was the fact that overwintering of bees, in any manner, is not presently a popular procedure. Normal seasonal procedures are typified by those of Les Walling of Williston, North Dakota.

Mr. Walling's operation is centered at Trenton, North Dakota on the Missouri River and within a few miles of the North Dakota - Montana state line. He runs 4,100 colonies, 1200 of which are located on irrigated land, 500 on non-irrigated land and 2,400 at Steele, N. D. on more or less prairie locations.

In terms of quality of pasture the locations on irrigated land are among the best in the state while the prairie

An apiary started with package bees on the bank of Missouri River near Williston, N. D.

The predominant honey crop on the prairie is sweet clover.

yards are average or slightly below. Alfalfa and sweet clover provide the western flow and colonies yield 150 pounds plus per season. The major flow at Steele comes from sweet clover where per colony yields approach 100 pounds.

Bees Killed in the Fall

In a typical season Mr. Walling begins each new crop year by ordering package bees. Preparations for introduction of these packages begin the previous fall with the killing of colonies. By the time colonies are killed, one, and often two, pulls of honey

Unloading and hiving package bees from a specially built van. Bees are trucked nonstop from California.

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have been made so that colonies are two to four stories deep. Cyanide applied with a cyanide "gun" is injected into the hive entrance on the evening prior to "breaking" the colonies.

Manipulation of frames takes place immediately following killing. Les feels that much of the rapidity of spring build-up can be directly traced to the condition of the brood chamber upon hiving of packages. Following this line of thought, he includes at least four full frames of capped honey plus some frames of capped pollen in each brood chamber. (See photo 2) These brood chambers are then stored in the honey house at Trenton or at Steele ready for use the following spring. Ordinarily this amount of food will carry the package bees from an April 5 introduction to a June 15 honey flow.

Storing Brood Chambers During Winter

Storage of brood chambers and supers in the fall is not a serious problem in North Dakota. One needs only a weather tight and rodent proof building to bring equipment through in excellent shape. Mr. Walling fumigates his warehouse with Cyanogas twice a year so most equipment is fumigated once per season.

Most commercial beekeepers in North Dakota kill from ⅔ to all of their colonies, extract all suitable combs, and then feed with sugar syrup for spring build-up. Those who do not kill all their colonies usually move the surviving colonies to warmer areas in the South and make increase for the following season. Mr. Walling kills his colonies and, as we have already mentioned, purchases new swarms each spring.

Inside view of the truck body showing the openings of baffles which direct air through the load of bees while in transit.

These are three pound two queen packages and are hauled from California in loads of 1000 by Les or his helpers. Les has a special tarpaulin covered carrier (photo) designed to insure the maintenance of proper temp-

Equipment is checked and readied for spring inside the honey house.

XUM

erature by regulation of air movement through the swarms. A check on temperature can be made from thermometers placed near the air intake and near the center of the load. Trips are non-stop and take about 48 hours.

Hiving Packages

Hiving of packages takes five days providing the weather is favorable. All queens are transported in cages without candy or nurse bees. The bees feed the queen through the wire screen cage. Prior to introduction of the queen 1½ pounds of bees are shaken into each prepared brood chamber. The queen cage opening is stuffed with a small amount of soft candy and placed between the top bars near the center of the hive body. Acceptance is excellent and queen loss negligible. Les feels his biggest problem in handling packages in this manner is control of Nosema disease. He and other beekeepers in the state have had both bee and queen loss from Nosema infection. He plans, in the future, to request packages treated with Fumidil for Nosema control before shipment.

Controlling Disease

For foulbrood control, Les treats every colony with Terramycin 10% each of the first three or four times the colony is worked. He also follows the voluntary procedure of burning when foulbrood infection is found. In the past ten years he has not had more than a case or two of foulbrood and these traced either to bee trees or poorly managed colonies outside his yards.

Dividing to Prevent Swarming

The early stages of swarming often take place in these package colonies just prior to or early in honey flow. This is broken up by moving a few frames of brood and the queen into the second brood chamber. Queen cells in the lower brood chamber are **all** removed. Two or three extracting supers are added above the lower brood chamber, a double screen is added and then the second brood chamber placed on it. Field bees all return to the lower chamber where new queen cells are built. A week later all lower queen cells except one are again removed and the lower chamber allowed to requeen itself. When both queens reach a maximum brood pattern the second brood chamber is then returned to its normal position.

This method of swarm control is one which can be followed quickly and easily by inexperienced help and provides maximum swarm control with a minimum of manipulation.

From swarm control to fall killing the only manipulation is top supering for production of extracted honey or bottom supering for chunk honey.

Les is one of North Dakota's top beekeepers. Both his equipment and his methods reflect his beekeeping ability. I don't believe his or his family's hospitality can be exceeded either. It's always a pleasure to visit such a member of the beekeeping profession.

Walling's honey house, Trenton, North Dakota.

Charles W.
Glen Ellyn,

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Good-will Marketing

Charles W. Gouget
Glen Ellyn, Illinois

Good-will marketing is a philosophy of marketing which aims to maintain a fair price for a product through the mutual cooperation of the producers, distributors, jobbers and merchants or storekeepers, and which at the same time caters to the best interests of the public. Probably any such philosophy should involve the following policies:

1. A kind of social responsibility among producers, distributors etc. to work for each other's best interests to maintain the dignity of the industry.
2. A feeling of personal responsibility to maintain a price that will insure a reasonable profit.
3. A personal obligation to maintain a quality product that will attract and impress the public.
4. A personal obligation to recognize the value of good service to distributors, jobbers, storekeepers and customers.
5. To realize the need for disseminating effective educational literature and other advertising based on fact.

Under a "Good-will" marketing philosophy no contributor to the marketing program can afford to be a "rugged" individualist at the expense of another contributor. Like the bees in a hive each will contribute his share toward the common goal of marketing honey efficiently. Every move made by each of the contributors will be dominated by the thought that all contributors to the marketing program must make a reasonable profit without which they cannot remain in business. At the same time each will also realize that profits made at the expense of some member or members of the marketing "team" are bad business and harmful to the entire industry. Goodwill is necessary among all concerned for a satisfactory return.

Contributors to a "good-will" philosophy of marketing will realize that price-cutting demoralizes trade causing considerable confusion among wholesalers and retailers, and by producing the inference among the public that perhaps the product is over-priced anyway. Each will seek to maintain a fair price for honey through cooperative

A large display is important to establish a brand name. To do this you need the good will of the store manager.—Photo courtesy of U.S.D.A.

advertising, and by high standards of quality. A so-called "fair" price is one that will insure a fair profit to most producers, at the same time considering the willingness of the consumer to pay, and also the competition offered by lower priced and higher priced sweets. However, price is determined largely by the need of the customer, and if that need is strong enough price ceases to be an important factor. Perhaps the yearly sales of automobiles is a good example of prices fixed largely by need and styling, rather than upon the ability to pay. Something like this kind of need must be developed for honey if a steady market is to be maintained. Cooperative advertising helps to develop this need in the minds of potential customers, and also helps to standardize prices.

Each contributor to the "good-will" philosophy will further realize that a quality product will attract and impress the public, and in a long run encourage repeat orders for all beekeepers, but each will also realize that quality alone is not enough to maintain a demand for honey. Other factors are equally as important, such as maintaining a high standard, establishing a brand acceptance, attractive packaging, and the proper display of honey products. High quality standards throughout the industry can be maintained only when each producer feels a personal obligation to use equipment that will guarantee a quality processed product for the market. He will avoid using homemade, makeshift methods which often produce varying standards of perfection which in turn are bound to affect the sale of honey as a good food. In avoiding such methods he is not only protecting his own interests, but also those of other honey producers.

Having established a standard, quality product it becomes necessary to promote it's brand name to obtain general acceptance and a wide distribution. To accomplish such a purpose the good-will of the beekeeper, the storekeeper, the jobber, and/or the distributor is almost an absolute neces-

sity. Each party concerned must be satisfied with his fair share of the profit "spread" although special efforts may be rewarded by reciprocal agreement. If, for example, a grocer will make a "king-sized" display of honey in his store the beekeeper can afford to allow the grocer a little more profit because of the possibility of a larger volume of sales. Where such an arrangement is possible both parties will benefit financially and personally from the friendship produced.

Aside from quality, the label and the shape of the bottle "brand" the honey sold. If the bottle fits the hand nicely, and the label is pleasingly attractive, and the quality "out of this world" customers will look for this package until they find it, otherwise they may accept any similar substitute. The problem of creating a "brand" that is generally accepted as superior by the public is one of the important problems of "Good-will Marketing."

Service has become the big word of modern business. It may mean anything from speed in filling an order to giving complete satisfaction to customers. The automobile service station is probably the modern expression of this idea. "Good-will" marketing often capitalizes on it's ability to give good service by adopting slogans such as, "Service with a Smile," "The Customer is Always Right," etc. all of which tend to bring the personal element into the picture, and help to make the customer feel important. Service may be, and often is a good substitute for direct advertising, and many other devices that are often thought to be indispensable for attracting the public. This fact should be remembered by all agencies involved in marketing the honey crop.

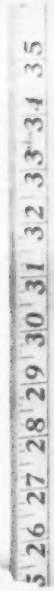
The beekeeper or distributor must keep his grocers happy by providing for their needs i. e. by providing the kind and amount of honey they need in container sizes most suitable for a quick sale. The grocer must be able to depend on this service, if he desires it, so that his supply may be kept up without supervision, and so that the shelf will always remain neat, clean and "fresh" without crystallized honey or sticky jars. The producer or distributor must assume this obligation which often results in "good will" favors from the grocer, such as providing additional exhibit space, and/or personally "pushing" honey in other ways.

Closely connected with the service of supplying honey to grocers and other distributors is the effective distribution of honey literature to shoppers. This too is a good-will service usually provided by the producer who aims to increase the demand for honey through educational channels. Booklets containing good honey recipes and other honey information can be exhibited on the honey shelf, on the store counter or attached to each bottle. This is a form of direct advertising that can do a great deal toward making the public "honey conscious".

(Continued on page 701)

Grocers know how to push a product; take heed to these suggestions.

Wintering Bees in Idaho



L. R. BUDGE
Malad City, Idaho

WINTERING BEES in Idaho is much the same, I suppose, as in most sections of the country where it seems advisable to pack and supply some type of protection from wind and cold. Sometimes I wonder if packing is necessary here as so many of our winters the past several years have been quite mild with real cold weather for only a very short period. Yet one never knows what the winter will be, so we pack for fear of a hard, long, cold winter.

I believe that the packing we do here is worth the expense and labor just for the protection of the equipment. I would emphasize the fact that packing is not the most important thing in successful wintering of bees.

Following are the things that should be done and supplied to insure good wintering:

1. Inspection for disease. Avoid puting diseased colonies in winter packs. Is the colony queenright? I mean by that, is the queen young and laying a good pattern of brood? Any queen showing rough brood pattern will likely be a drone layer by spring.
2. A good cluster of young bees is necessary if the colony is to winter well.
3. Plenty of well ripened honey is the most important of all. All honey stored by the bees here in my locality is a good honey for winter. If you are in a location where the bees store a lot of honeydew it is best that it be taken away and a better honey or sugar syrup supplied.

An average colony of bees will winter here on 60 to 70 pounds of honey.

I prefer to have the heaviest honey in the top brood chamber. (I winter in two standard hive bodies.) In real cold weather bees will go to the feed and keep closer to it if it is above them than if it is underneath. Heat of the bees rises and thus the bees will tend to go up and stay where it is warmest.

I have used two kinds of packs and find either to be quite satisfactory. The first pack I used for about 20 years was straw and dirt. Place the colonies side by side as close as they can be set together, fronts facing east, south, or west depending on the general direction of wind during the winter. Fronts should be away from prevailing winds. I put 12 to 14 colonies in a row. About eight inches of dry straw is placed at the back and on top of the colonies. Then bank dirt up the back and over on top. Put all the dirt you can make stay on top without sliding off the front. It is necessary to be sure

Before winter inspect your colonies for disease - Photo courtesy of Socony Mobil Oil.

to get enough dirt on back and top to shed off any amount of rain or wet. If the wet penetrates and wets the straw it would be better if the colonies were not packed but left in the open. If the straw once gets wet it will hold the moisture all winter and that would make a damp condition for the colonies and that is very undesirable. Mold will form inside and you find a weak colony if it winters at all.

This is a very fine winter pack if done properly but I have discarded it because of the amount of labor involved.

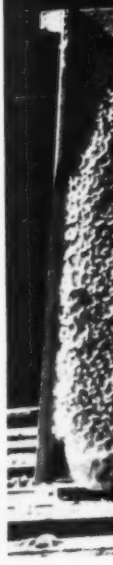
Felt Building Paper for Protection

In place of the straw and dirt I am using 15 pound felt building paper. Unroll a strip of paper the length of the pack and place on edge to the ground at back and up the back and lapped over the top, then another piece on top and lapped down the back. This leaves the front of the colonies exposed either if straw and dirt or paper is used for the pack cover. Nail a lath on

One roll of 15 pound building paper will cover 30 hives.

the top front to hold the paper down and also a lath on the back on the edge of the paper placed on top and down the back. Put a small bank of dirt along the back to hold the paper to the ground and to turn any water that may run under the pack from the back.

A roll of 15-pound building paper will cover 30 colonies and the cost is about $3.00. I use the paper at least three years so it costs about 3½ cents per colony a year for paper. When the colonies are unpacked in the spring I roll the paper up and store it to use again. As the paper becomes weathered and some holes appear in it I use that for the back paper, and the best or new paper on top. When you once get paper enough to cover your colonies, then a few new rolls each year will replace any that gets worn beyond use.



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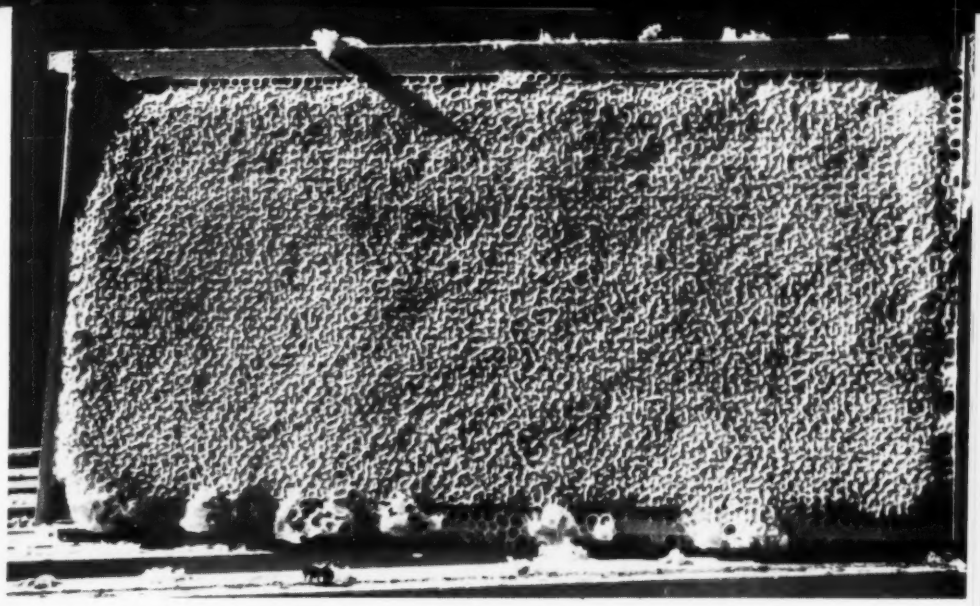
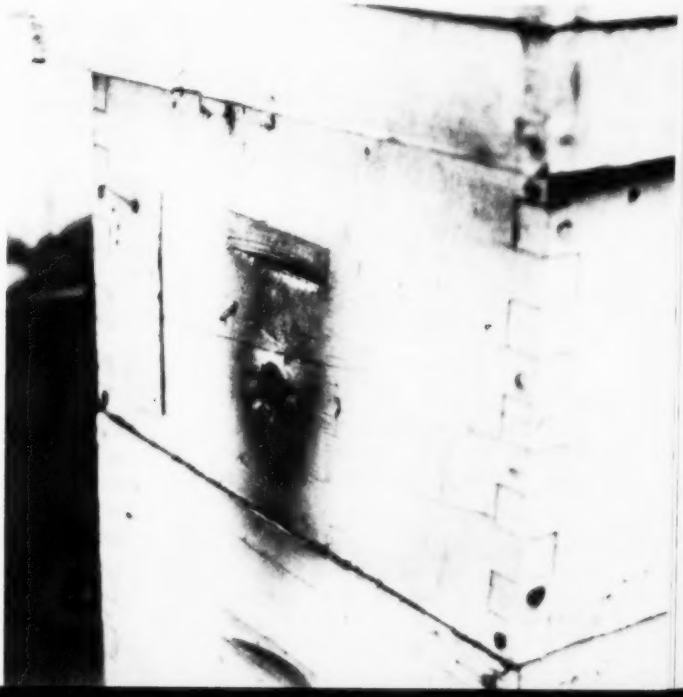


There should be nine or ten frames like this one in the upper brood chamber.

Upper Entrance Important

If either pack cover is used I use a nine-sixteenths auger and drill a hole in the top super just under the handhold. This is important. It helps to keep moisture from forming in the top of the hive and also will not get clogged up. The bees must always under all conditions have an entrance. A bottom entrance on the bottom board can become clogged with dead bees from the inside or kept tightly closed with ice a good part of the winter. This little hole will save you colonies especially when you have a long cold winter, with lots of snow and rain.

Don't let the pesky mice get into your hives in winter and destroy your combs. Put some poisoned wheat under each pack and that takes care of the mice.



Top and bottom entrances are important for successful wintering. The bees will always have an entrance.

The author one year later.

Learning the Hard Way

An unforgettable experience of a man and his first package of bees.

RAY REINHOLD
St. Louis, Mo.

ANOTHER COUPLE was visiting with us, the women indulging in their "girlie" talk and we men hitting the high spots on sports, work, world affairs and hobbies. I told him about an article I had read in Organic Gardening on beekeeping, how I had requested a bee supply catalog and wound up ordering a beginner's outfit, including bees. At that point (and I'll never understand how women can apparently be so engrossed in each other's conversation and yet know what others are saying), my wife said, "You did what?"

Well, I hadn't told her. Why? Maybe I had been afraid she wouldn't consider being mixed up in this new madness of mine. But now she knew! With some personal misgivings I let her in on my secret and was conscious of the fact that the other woman couldn't quite make up her mind whether to be sympathetic with my wife or to get up and leave the house of this crazy man.

Now that the thing was in the open, I told my wife what to expect—that all the equipment would come first, with the package of bees arriving April 15. Sure enough, in December the parcel post truck delivered the knocked down material. Being a city boy I had never seen a beehive before; as far as I could recollect, not even a picture in a book or magazine, and I knew no beekeepers. Nevertheless, with the excellent instructions furnished, it didn't take me many nights to have the bottom board, body, inner cover, outer cover and frames assembled; in fact, although I'm not too handy when it comes to that sort of thing, I enjoyed putting everything together. I still enjoy doing it. There remained nothing to do now but read the book "Starting Right with Bees" furnished with the outfit. Frankly, I don't know whether the information in it made me feel better or worse; certainly, there were times when I had serious misgivings about the whole idea.

The Bees Arrived

I came home from work that Monday evening to be met at the door by my wife with a sort of peculiar look on her face. "Well, they came" she said, but she needn't have said so, I could hear them buzzing down in the basement. Now I really wondered whether I had done the right thing! Yes, she had brushed sugar water on the screen like the book said, but the mail man had been concerned about a possible hole in the package. It seems there were some bees on the outside. (It was not until some time later I learned that the buzzing within the package attracts other sociable bees that happen to be flying about.) The hive had previously been placed in my back yard, so the only thing remaining to be done was to put the package in, after eating my evening meal. I don't remember now whether my appetite was affected or not, but the die was cast. I donned the veil, put on a pair of cotton trousers, a long sleeved white shirt and leather gloves, not necessarily in that order. Strictly in accordance with the book, I removed five frames from the hive, took the syrup can out of the package, hung the queen cage candy side down between two frames, inserted the package in the space left by the removed frames, and closed up the hive. No stings or trouble, but where could the bees have stung me anyway?

For the next seven days I fed them sugar water in a Boardman feeder. That seventh evening I found that the queen had been released, but not knowing anything about bees I really could not tell whether they were doing what they were supposed to or not. Luckily, they hadn't built comb in the package as I later found out they sometimes do, so I just removed it and put the frames back in place. About this time I discovered that an old beekeeper (83 years of age) lived not too far from me. I also realized that I should have a super or two. These two facts motivated me to pay the gent a visit and began a wonderful friendship that still exists. In addition to opening one of his hives and going through it with me, he also sold me two supers with frames and foundation in very good shape.

I'd like to report that everything went well, but it didn't. The bees filled

(Continued on page 703)

"I BELIEVE OUR SCHOOL SYSTEM SHOULD LEAN HARD ON THE ESSENTIALS OF EDUCATION, LIKE READING, WRITING, ARITHMETIC AND BEEKEEPING!"

Taking the Hard Work Out of Beekeeping

Are you looking for a good way to supplement your Social Security?

A. C. ASKEW
St. Thomas, Ont., Canada

KEEPING BEES is bound to involve some hard work, mostly lifting of one sort or other. Big operators avoid a lot of it with their mechanical equipment but the small or medium beeman, and they are by far the most numerous, neither need nor wish for such expensive outfits. As one grows older, one instinctively seeks for easier ways of doing jobs that previously were taken in stride. And the proportion of those who follow the craft is probably highest in the 60-70 age range, because our young men are just not interested.

True, the monetary rewards are not outstanding, but usually they are sufficient for a moderately good standard of living, and even when returns are low, often in this district this happens, time is available in off season to profit by any opportunity for other work that may develop.

But the satisfaction one gets from watching the "workers" work for you, and their antics while at work in the hive, including their quarrels, the scheming one does to make them work a bit harder, the problems that crop up when the schemes don't work out, the grand feeling of being out in the sun and air, instead of in factory or office, and the relaxation that comes in driving home quietly along a country road, instead of spending hours in going to and from work in heavy traffic—these things cannot be measured in money.

But how to make the work easier for us who have maybe passed the 70 mark and still want to have our bees! Let me tell you how I who start to live on "bonus years" next month, manage.

Tipping the double brood chamber hive backward.

Replacing the upper brood chamber.

First, I work about five hours every day on a small city newspaper. In extracting time I can usually get some time off, and I am fortunate in having a son-in-law, who though he doesn't like the bees, does love honey, and extracting during week-ends is fun for him, and he saves me a good deal of lifting.

Several years ago, anticipating the present, I began to acquire a stock of shallow supers, and these I can handle quite nicely. Most of my hives, (I have 200 in five yards) are in double full-depth brood chambers, and in working them I use two different methods. One is to gently smoke the entrance, then tip the hive over flat on its back, separate the brood boxes with the hive tool, let the lower box quietly back onto its stand, proceed with my examination, then lever the other box now standing on its end into its place on top of the lower one, edging it along inch by inch without any bodily lifting.

Another Method is as Follows:

If you have no need to go into the lower brood chamber, or if you wish to place an excluder or escape board on, place these at your right hand leaning on the corner of the hive and easy to get at. Next break the seal between the two bodies, ease the top one towards you a few inches with the hive tool, then raise the end next to you, pivoting the box and keeping control with your left hand. Pick up the excluder with your right hand, place in position and lower top box, easing it into exact place with hive tool. If very heavy, pushing gently with your tummy, helps a lot.

The same routine can be followed if the escape board is used. **Caution:** When holding the box with the left hand, do not allow it to go beyond the center of gravity, or it will get away from you.

One of the greatest labor savers is the practice of "no winter packing".

Putting on the queen excluder.

Packing may be useful in some areas. In southwestern Ontario, 20° below seems our limit, and we usually have several mild spells during the winter.

Our experience covers quadruple cases with heavy packing, two colony cases, singles, tarpaper with packing and without, now nothing. Young bees, young queen, ample stores in the right place and a dry hive, are the essentials, and the only ones. Packing can even be detrimental, but as a labor saver alone, no packing stands high in my estimation.

Of late years in Canada, there has come into use the 70 pound round drum, replacing the 60 pound square can. The round drum has no paper case, and often no handle. Lifting these drums from the tank, putting them in place, and stacking them is a heavy chore, at least I find it so.

Discarding an old heavy 2½ gallon pail, the thought occurred to me that the bail might be useful to move the drums of honey. It works fine. Bend the ends of the bail so as to make hooks that will snap into the groove around the top edge of the drum, and you have a handle so that with care, you can swing 'em up three high without bodily lifting. I hope to see in Gleanings some other labor-saving ideas we senior citizens can use. "Don't give up the ship", or your bees, just because you're 70.

A New Use For Soil Heating Cable

I WOULD LIKE to pass on to fellow beekeepers an experience with granulated honey that may save them considerable time and money. Most of my honey is sold in 60 pound cans to bakers, re-using the cans until they are no longer suitable; thus the honey is stored in 55 gallon drums until needed.

I intend to wind one of the cables around my extractor to heat the honey as it is extracted next fall, thus speeding up the straining and settling of the honey. Many other uses of these cables that operate on 110 volt supply and come equipped with a regular A.C. plug will occur to other beekeepers, as they can be wrapped around nearly any size or shaped object to heat honey without fear of overheating and damaging the honey. A thermostat to automatically regulate temperature is available to use with these heaters but since it is rather expensive and the maximum heat generated was only 160 degrees F. it was decided and found unnecessary for this application.

Nobody Told Me

RAY L. McLESTER
Paragould, Arkansas

IN A RECENT fall, Deputy State Bee Inspector, Bryson Waddell and I had an exhibit at a county fair. Across the building from us was the booth of a 4-H Club boy with a honey-bee project. He had put a lot of work into his display under the guidance of his Agriculture Teacher and Club Leader.

He had a number of specimens of honey, wax, equipment and other items. These were all dominated by a large placard with 10 "Do's and Don'ts". "Do" number five was (underlined by way of emphasis) "BE SURE TO CUT OUT ALL OLD BLACK COMB EVERY YEAR."

When we questioned the leader about it he replied: "That is what the book said".

Perhaps it would be good for all concerned if beekeepers would visit and talk more with Agriculture classes and their leaders, making sure our terminology is on the level of the layman.

There have been so many letters from our readers requesting more imformation concerning the article "Preparation for Wintering" which appeared in the September issue of Gleanings that the author, Mr. Bunch, has added a foot note which appears here.

A Footnote to "Preparation for Wintering"

Mr. F. Q. Bunch
Welch, Minnesota

The writer has received so many letters of inquiry since the article entitled "Preparation For Wintering" appeared that it seems necessary to explain some of the points at this time.

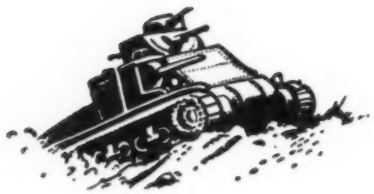
In regard to the use of two queens we wait until the colony has built up quite strong in the spring. We have our queens ordered the previous fall with a reliable southern breeder, and queens are shipped to us when needed. They are shipped in battery cages holding 26 queens to the cage, each queen being contained in a regulation queen cage, minus any attendants. The battery cage has approximately 1½ to 2 lbs. of bees to feed and provide warmth for the queens during the trip north. We think queens shipped in this manner are less apt to become chilled during the early season.

The colony goes into winter in two stories and is kept that way in the spring until it becomes quite populous when the dandelion flow is on and the bees start to become crowded for room. It is at this time that we make our two-queen divisions. The colony is opened and two frames of sealed brood, and one frame of unsealed brood with some honey and pollen in the frames are removed. If the colony can spare it, one frame of honey is also taken out of the parent colony and given to the new unit. If the queen is found she is set aside on a comb and the empty combs from the extra hive body are inserted in the blank space of the parent colony. The queen is put back in and a double screen set on top of the parent colony, with entrance for the new unit being provided in the double screen, similar to the illustration on page 521. If the queen is not found (we do not hunt for her) we simply shake off the bees from frames for the new unit in front of the hive entrance or on the top bars of the parent colony. Place an ordinary queen excluder over the parent colony, set on the new unit with the brood and honey and the bees will work up through the excluder and care for the brood in the upper unit. The next morning real early we remove the queen excluder and insert the double screen. This eliminates hunting for the queens and saves time.

More about the upper unit.

The unit should have more bees than would be normally necessary to cover the combs where they are placed above the screen, in cases where the queen in the parent colony has been found. We shake the bees from one or two extra frames into the upper unit, when this is being done. We give each upper unit a division-board feeder of syrup to keep the bees contented and this helps with queen acceptance.

(Continued on page 699)



The Battle of

"Everywhere in the entrances to the staggered hives, Italians and bumblebees were locked in a death struggle."

HARRISON McELWAINE
Westfield, New Brunswick, Canada

THE ALL-OUT attack on my apiary was launched in the early hours of a July morning.

For some days prior to B-day, I had noticed commando forces of the genus Bombus raiding my colonies of Italian bees. The free-loaders met with little opposition. Even my strong colonies could not defend all the openings I had left when I staggered the hives as a swarm control measure. Some of the marauders were killed in the act by the guards as they gorged themselves on the honey that my hard-working bees had labored to collect. But many of the robbers got away with their load of booty, droning off to the forest where, I've no doubt, they informed their fellows of the location of a great store of honey to be had for the taking.

And somewhere up in that forest on the hill behind my farm, a bumblebee council of war was held, and plans were drawn up for a mass raid on the brown bees that lived in the little white houses down in the valley.

I should have been warned. Last summer, bumblebees in greater numbers than I had ever seen before kept up ceaseless raids on my colonies; but the Italians always managed to hold the fort and save their precious stores from being plundered.

However, even I was unprepared for the sight that greeted me on this July morning when I opened the back door about six-thirty to let out Chum, my Labrador retriever, for his pre-breakfast run.

Now Chum is as sensitive to the presence of bees as a barometer is to a change in air pressure. He tangled with one of my colonies a couple of years ago when a bee stung him. Maddened by the pain, Chum, who is nearly 12 years old and who should know better, rushed at the hive, clamped his teeth into a corner of it and began to shake it as he would a rabbit he caught nipping off my beet tops.

The enraged Italians, ready to protect their property, swarmed out to the attack. In a twinkling, Chum was covered with bees, each one driving a sting like a red-hot needle into his flesh. He didn't know enough to throw in the towel and run. With a bravery worthy of a better cause, he continued the assault on the hive.

I rushed in to grab him by the tail and try to drag him off. But I got stung so many times, I had to flee and get my net and gloves. When I finally dragged Chum clear, I carried him into the kitchen where I got hot water and baking soda. And as I scraped stings off my own flesh and pulled them out of Chum's swollen nose, I lectured him on the folly of any more sparring matches with the bees.

He kept clear of the hives after that. Once he sat down on a bumblebee and rose with the speed of a dog that has squatted on a red-hot stove lid. Another time, a second bumblebee got him on the tip of the nose. All this built up his hatred and fear of bees to the extent that a bee flying 20 feet away would alert him.

of the Bumblebees

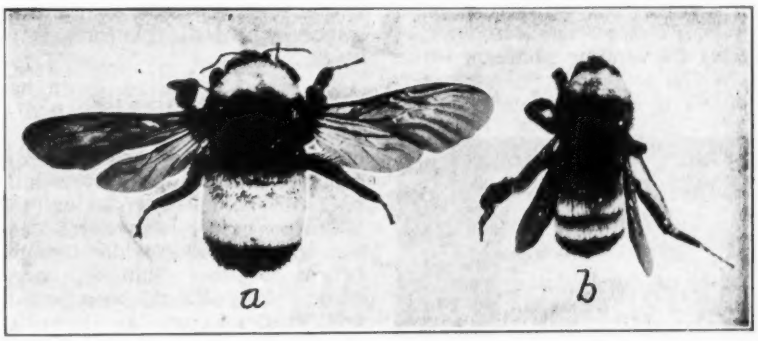
So when I let Chum out of the house at six-thirty, I had no idea that this July morning would be B-day.

But Chum did. He was no sooner outside the door than he loosed a howl of terror and dashed back inside, nearly upsetting me in his rush. Up the stairs he scrambled and under my bed where he lay shivering in terror.

Then I heard it, the same noise that had alerted the old dog. The warm morning air vibrated with the roar of bees. I ran around a corner of the house and looked up the field.

area. I had never seen so many wild bees before. They struck me with the force of thrown pebbles. They clustered on my clothing and clung to my net in such numbers that I had to claw them away to see what I was doing.

I quickly pulled down the stacks of hives and set them up again — flush. I closed the back entrance with grass and did the same to all the holes bored under the handholds. Then I inserted the main entrance block and left only a small opening for the bees to defend. Over the top hive, I set a wire-screen bee escape board for top ventilation.



Bumblebee, (Bombus americanorum) a, queen; b, worker.

The hives were black with bees!

Now what? I asked myself. This was no time for bees to swarm. My last examination of the hives only a couple of days before had shown no queen cells. What was all the uproar about?

When I got near enough to the hives to see what was up, I didn't pause for even a second look at the swarms of bumblebees — I wheeled and ran back to the house for my net, gloves and smoker.

My bees were fighting a losing battle by the time I got into the fight, my smoker spewing thick fumes. Everywhere in the entrances to the staggered hives, Italians and bumblebees were locked in a death struggle.

The bumblebees must have gathered support from every wild colony in the

When the bumblebees massed in front of the tiny front entrance, I killed them by the score with a spruce branch. The remainder immediately turned their fury on me, and for a few hectic moments I was a wee bit worried for fear they might find an opening in my clothing or get under my veil. But my help turned the tide of battle, and the Italians finally drove the invaders off and put them to flight.

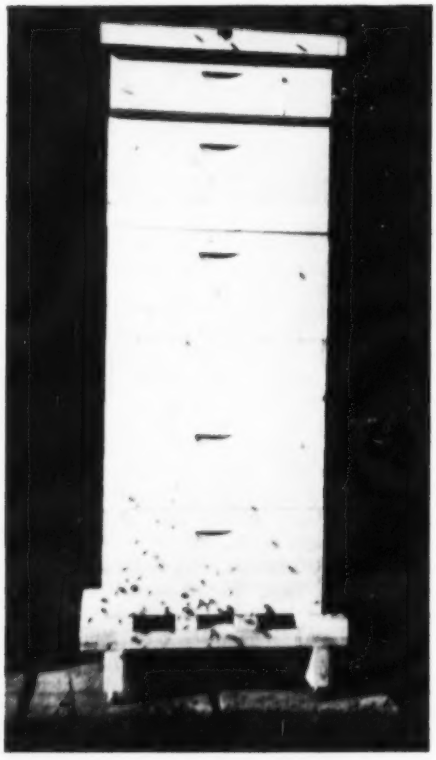
Strangely enough, my one colony of Caucasians held their own. Although gentle enough to handle, they are better fighters than the Italians. They remained in the hive, forming rank after rank in the opening after the fashion of the old Roman Phalanx. Against this defense, the bumblebees

(Continued on page 703)

Traffic Control for the Hive

LELAND A. QUINDRY
Philadelphia, Pennsylvania

THE ACCOMPANYING photograph shows an experimental hive having a lower entrance at the side of the hive, which is partitioned into three equal openings. Close inspection of the photograph, however, shows that the entrances at each side appear to be larger than the one in the middle. This optical illusion is accomplished by painting the landing platform white in the middle, and black at each end, thereby making the two side openings more conspicuous than the one in the middle when viewed from the outside by the bees as they approach the hive for entering. From the inside, the center opening appears to be the most conspicuous because the landing platform, being painted white, reflects more light into the interior than do the other entrances where the platform is painted black.

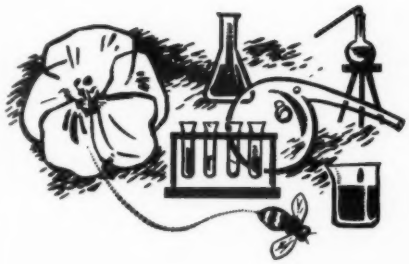


In actual operation, more bees enter by the side openings than leave, while more bees leave by the center opening than enter. Another hive was prepared with the same type entrances, but with colors reversed, so that the platform before the center entrance was painted black while the platform before the two side entrances was white. While that arrangement was not so satisfactory as the one illustrated, there was ample confirmation of the premise upon which the experiment was based, which was this: Bees fly toward the light when leaving the hive and toward the dark when entering.

While a certain amount of entrance friction is eliminated by this means, and while pollen and nectar bearers are thereby directed to storage areas on the combs, it must not be assumed that such an arrangement would be 100 per cent effective. Maximum effectiveness seems to be attained after being in operation for a week or ten days. Evidently there are a number of factors, both from within and from without the hive which influence a bee's choice of a passage way.

As for its practical effectiveness in the form of increased honey production, that can only be accurately ap-

(Continued on page 693)



Research Review

DR. ROGER A. MORSE
Research Editor of Gleanings and Ass't. Prof. of Apiculture
Cornell University, Ithaca, N. Y.

The Best Time to Move Bees for Pollination:

The number of worker bees which will visit a crop may be increased by not moving the colonies to the crop until after flowering has begun. This principle has been tested for eight crops and probably is true of most if not all crops.

The results indicate that when bees are moved to an area before the flowers one wants pollinated are opened, they find other plants on which to work. Many foragers continue to visit other flowers even after new plants become available.

The plants on which this principle was tested were: peach, sweet cherry, apple, birdsfoot trefoil, alfalfa, and red clover. In earlier work the senior author (Dr. Free) undertook similar experiments with field beans and opium poppies.

Since delaying the moving of colonies to crops "probably always increases pollination" growers may ask more for such service when they become familiar with this fact. This may pose an extremely difficult problem, espeially where the beekeeper is moving a large number of bees for pollination purposes. Apple pollination is a particular problem since weather in the spring is highly variable and roads are bad. Persons who rent only a few colonies might provide this service at no extra charge but larger operators may ask a greater fee.

Free, J. B., Nancy W. Free and S. C. Jay
The effect on foraging behavior of moving honeybee colonies to crops before or after flowering has begun. Journal of Economic Entomology 53:564-6. 1960.

Bee Larvae and Pupae for Human Consumption:

It is estimated that about 130 tons of brood (largely pupae) are wasted in the western Canadian Provinces each year when the bees are killed off in the fall. Chemical analysis show that brood is rich in protein and certain vitamins.

The authors experimented with freezing, drying, smoking, and pickling the brood in preparation for human consumption. The pickling was done in brine, brandy, and vinegar. The authors state, "Initial reluctance to eat these products proved easier to overcome than was expected".

When one considers the increase in human population which is taking place and that already in certain areas there is a shortage of good food, the use of brood does not appear to be too unreasonable. One might also point out that our eating habits are already sufficiently bizarre that the inclusion of bee brood should not seem too radical.

Hocking, B. and F. Matsumura
Bee Brood as Food. Bee World 41: 113-20. 1960.

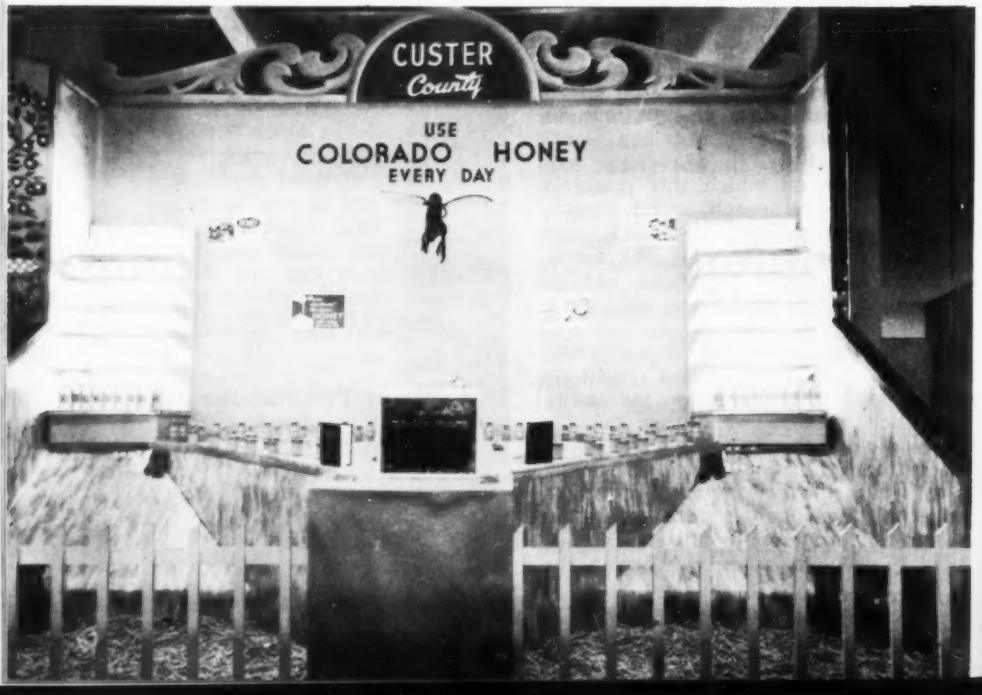
Red Clover Pollination:

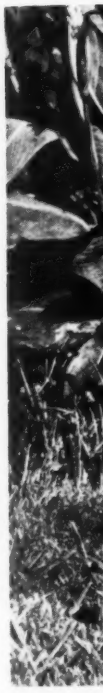
Experiments undertaken in Minnesota show that honeybees are important pollinators of red clover after sweet clover (Melilotus alba) is no longer in bloom. This fact applies to both second crop mammoth red clover

(Continued on page 703)

Honey, one of nature's oldest and most attractive foods, came in for attention and approval during a reception given September 6 by Robert N. Anderson, Agricultural Attache, U.S. Embassy, London, in honor of British honey trade representatives. The honey section is part of the U. S. exhibit now on display in the British Food Fair. It draws thousands of visitors each day who see and buy individual retail packages of the product. (L-R) Mr. Anderson; G. L. Vincent, Director, Kimpton Bros. Ltd., London; R. E. Morrison, L. Garvin and Co. Ltd., Isleworth Middlesex; and Millard Coggshall, Chairman, Honey Industry Council of America.—Photo courtesy of USDA Foreign Service.

This honey booth, exhibited at the 1960 Colorado State Fair, won the sweepstakes award in the Dry Land Division. The booth was the county agriculture exhibit of Custer County and it was constructed by the Assistant County Agent, Dooley Toyne, with the assistance of County Agent, James H. Doyle and several 4-H members of Canon City, Colorado.





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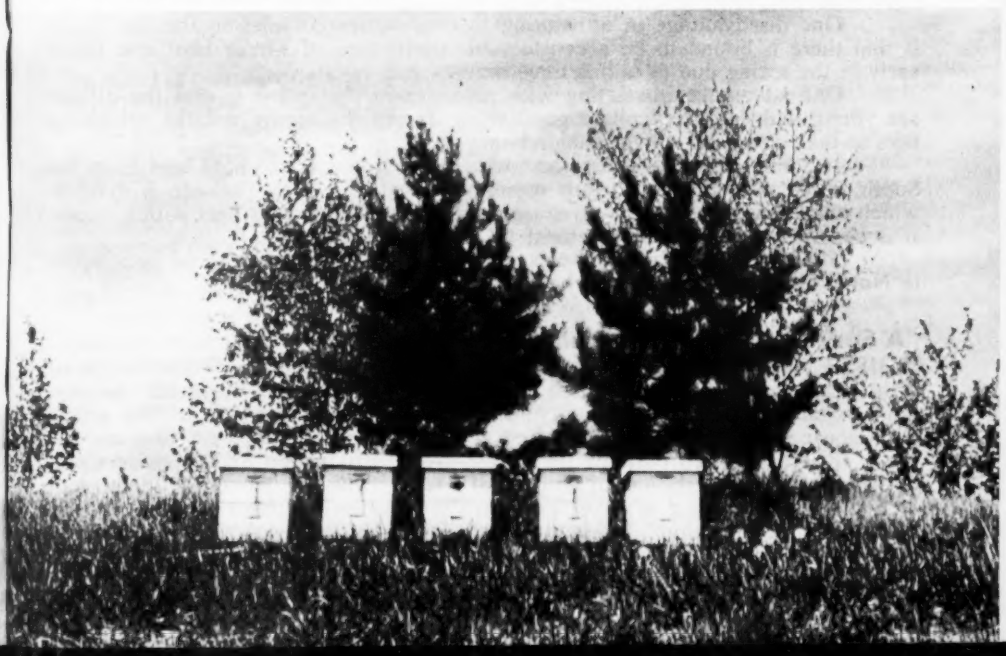
NEWS REEL

Competition for state and national honey queens is indeed going to be strong again this year if Sewwana Davidson of Newbern, Tennessee is an example of the candidates. Sewwana is the Dyer County Beekeepers' Association candidate for the 1961 Tennessee Honey Queen.

This apiary is protected by the small windbreak of trees that stands behind the hives. The colony entrances face toward the south. —A New York State College of Agriculture photo.



Editorials

Killing Bees in the Fall — Starting with Packages Next Spring

THIS HAS BEEN practiced for some years in parts of the North where the winters become very cold and bees are unable to get periodic winter cleansing flights. Those who practice this method claim that it is more economical than attempting to carry bees through severe winters. One thing in its favor is that it is unnecessary to expend labor and material in packing colonies of bees to protect them against the cold winter winds. In the fall it is only necessary to destroy the bees with Cyanogas late in the season, then store the single story brood chambers in a suitable building during the winter. The hives and building should be made mouse-proof.

It is necessary to order packages with queens in advance, to be assured that shipments will be received at the proper time the following spring to be put into the hives that are placed on their summer stands. It is customary to save enough combs of honey and pollen, to put into the hives intended for the packages. It is surprising how quickly the packages will develop into normal colonies if they are given the proper attention and the season is favorable for nectar and pollen during the spring months.

Obviously the cost of the packages, also the transportation charges from the South have to be reckoned with. Some commercial beekeepers haul their packages from the South at a time when they can get away quite easily.

One disadvantage in attempting to over-winter colonies in the far North is that there is bound to be a considerable percentage of winter loss, also losses early in the spring due to failing queens.

One advantage in starting with packages in the spring is that the queens are young and are likely to do good work during the spring months producing bees to take advantage of the major honey flow.

In some parts of the far North where it is customary to haul bees from the South, three pound packages are sometimes used and each package is divided, which means that each hive is given one and one-half pounds of bees with a queen. It is necessary with this arrangement to order extra queens.

The article appearing in this issue, page 649, on what some beekeepers in North Dakota are doing will be found interesting.

"A Survey of American Honeys"

THIS IS THE TITLE of a manuscript written by Dr. Johnathan W. White, Jr. of the Eastern Regional Research Laboratory, Agricultural Research Service, United States Department of Agriculture, Philadelphia, Pennsylvania. The article will appear in ten installments, the first appearing in this issue.

Briefly, the ten parts of the article are, "Introduction and Average Composition", "Characterization of Individual Floral Types of Honey", "Identity of Honey Sugars", "Effect of Crop Year on Composition", "Effect of Area of Production on Composition", "Relation of Granulation Tendency to Composition",

"Relation of Color to Composition", "Effect of Storage on Honey Sugars", "Effect of Storage on Diastase Content", and the "General Summary".

Since not too much is known about American honeys, this series of articles should prove interesting and helpful.

Don't Let Bees Starve

THERE APPEARS TO BE a tendency among some beekeepers who over-winter their bees, to scrimp on winter stores. Such faulty apiary management usually results in a considerable loss of bees during the winter and early spring months.

If only beekeepers would leave an ample amount of stores on each colony in the fall there would be a comparatively small percentage of loss of bees. It is safe to say that more bees are lost as a result of starvation than from any other single cause.

Most beekeepers are now wintering in double brood chamber or what some call food chamber hives. If the upper chamber is well filled with honey in addition to some honey in the lower chamber the bees are likely to reach spring in good condition. Some beekeepers make a practice of wintering a few colonies in three stories. We have tried this and have been amazed at the unusually populous colonies that emerged the following spring. By wintering a few colonies in three stories, it is possible to have on hand some extra combs of honey to give colonies that have used an unusual amount of stores and need more food.

An extra amount of honey reserved for colonies in the fall is never lost because it is converted into bees that will increase the size of the colony and thus store a larger crop of surplus honey the following season.

Aster Honey for Winter Stores

SOME YEARS AGO aster honey was not considered a good winter food for bees. Possibly the reason was that in some instances a late aster flow is followed by cool weather during which the bees do not have a chance to properly cure the honey and expel the excess moisture. When this occurs and is followed by a severe winter, a considerable loss of bees is likely to occur, especially if the bees do not have an opportunity for frequent winter cleansing flights.

During the fall of 1935 in this area we experienced a very heavy aster flow. Bees were whitening combs on October 19. This flow was followed by cold weather and the winter set in early that fall with the result that an unusually heavy loss was experienced.

If the bees have a chance to properly cure the aster honey after it is stored, it is satisfactory for winter bee food, at least that has been our experience in this area.

Support Your American Beekeeping Federation

SOME BEEKEEPERS MAY NOT realize that the Federation was organized for the good of beekeepers everywhere and that it should have our support.

We can do no better than to quote from a letter written by L. R. Budge, President of the American Beekeeping Federation, as follows: "The Federation was organized to promote the welfare of our beekeeping industry. Each year at the annual convention the membership elects a group of officers to carry out the purposes of the organization and the membership expects the officers to fulfill this obligation. I am sure that those that have been given this responsibility have a desire to do their best to fulfill this trust.

"It seems that the membership fails to realize that an organization of this kind that must maintain an office and a full time secretary needs money to carry out the program expected of it.

"At present your officers are faced with meeting your financial responsibility without the necessary funds. Your Executive Committee must borrow money on their own individual credit to meet your obligations. I have every confidence that you will help in this emergency. I am sure you are unaware of conditions as they are and the help that we need."

So let us all send in our membership dues immediately to the treasurer, Joseph O. Moffett, 115 S. College Ave., Fort Collins, Colorado.

XUM

Live and Learn

PROPOLIS PETE

LAST MONTH I LEFT you in suspense, with honey leaking out of the floor of my extracting shack. It didn't take long for the bees to find it either. There is a gap in the flow around the first of August in this location, and this looked like it might be the answer to a bee's prayers. I knew I was in for some fun, so I got out the hose and watered that side of the building good. The idea was to thin down the leaking honey hoping that I could get it so thin that it wouldn't interest the bees. The idea didn't work. The bees came by the hundreds, and then they came by the thousands. Soon I began to notice that the population inside the extracting room was growing faster than a new development down the road. It still wasn't too bad though, so I knocked off for lunch.

When I got back the air in that room was so thick with bees that you could hardly see across it. They were coming in through cracks, loading up and flying to the windows. They would get out through the escapes, tell the girls back home what they were doing and then come back for more. As soon as I could find them, I closed the windows so that they couldn't get back home with their loads until I wanted them to leave, and dashed around the house to see where they were getting in.

Where the chimney joined the shingles, there seemed to be a convention going on. There were no holes visible. Then I went around to the other side of the chimney. There the wood had rotted away. The bees were alighting on the shingles in company formation, and marching in four abreast. The wood was so rotten that I tore it away with my hands, and plugged the gap with a big wad of steel wool that by some miracle I had bought that morning to use on a refinish job on a kitchen table.

That stopped 90 per cent of the entries but still they were getting in by the dozens. Wherever I saw bees congregating I found a crack or hole, and into it went enough of the steel wool to make it impassable. Every hole plugged cut down the number of bees getting in, but still they came. At about this time my eye fell on a can of farm disinfectant. Since the main ingredient of this particular brand is creosote, and knowing that bees don't like creosote, I started painting the outside of the shack. It didn't take long to realize that I didn't have the time for a paint job, so I got out my knapsack sprayer. I had just enough to make a good solution in four gallons of water, so I went to work with that. It pretty nearly solved the problem, but still there were more bees inside the house than I cared to dodge while I was working.

Where they were coming from was a real problem. I looked, and I looked, and I looked. There were still bees snooping around all over the outside of the house, but I couldn't find any holes or cracks with bees going in. I was just about ready to reconcile myself to the plan that I would close the windows to trap any bees that did get in, and transfer my operations until after dark when the bees were done for the day.

Then the real boss of this household, much worried about my safety, got the bright idea that maybe they were getting in through the crack where the floor boards joined the shingles, that the disinfectant was repelling them, but that some bees were braver than others. I looked, and it was true that most of the flying bees outside were snooping along the ground near the floor boards, but I couldn't get down far enough to look up to see if there was a crack there. Looking from the inside did no good whatever. Another suggestion from the high brass almost finished the job. She said to get a pail of moist dirt from the garden and throw it against the angle where the wall and floor joined, from the inside. It worked.

Now there were only about 50 bees an hour getting in. Also, the snoopers around the outside of the building were gone. So where were they coming from?

Remember way back when I said that this old shack was on cedar posts? Well, there is a step down from what

(Continued on page 697)

Vitex Agnus Castus Chaste Tree.

Let's Talk About HONEY PLANTS

DR. HARVEY B. LOVELL
University of Louisville,
Louisville, Ky.

Buttonbush, also known as button willow (**Cephalanthus occidentalis**) is widely distributed. I have seen it from Maine to West Texas. Pellett (**A.B.J.** Sept. 1946) wrote that Roy Eli of Cory, Indiana sent him flowers and leaves of the button willow with the statement that it grows in Birch Creek Bottom ten miles south of Brazil, Indiana and that his bees filled a super of honey from it in a week.

Illinois. V. S. Milum wrote that the honey is mild and light colored and that it blooms from June to September in his state. Fred H. May also reports that buttonbush along the Illinois river produces much honey in his neighborhood.

Louisiana. Oertel wrote that buttonbush blooms in June and July in swampy places throughout the state. Bees sometimes work the blossoms heavily but the corolla tube is too long for bees to reach the nectar easily.

Okalahoma. V. K. McMaster of Duncan reports that the honey is light colored and mild and that the bush blooms a long time from July to late August at a time of the year when additions to the honey flow are usually welcome.

West Virginia. Mr. David Pasnick of Fayetteville writes to ask me where he can get a buttonbush and adds "The bees sure work all day on it. I would like to plant it in my garden." As buttonbush grows in swamps and on the edges of shallow ponds and shallow rivers or creeks I doubt if it would grow in dry ground even if watered regularly. It is chiefly valuable in northern United States where there is an abundance of shallow ponds and lakes. Beekeepers usually move their bees to the edge of such ponds to obtain a surplus.

Arkansas. Mr. Lindreth E. Cordell writes to ask where he can buy a Siberian peatree to plant near his apiary. They can be obtained from Pellett Gardens, Atlantic, Iowa.

Ohio. Mr. Engene Baxley of Middletown sent me a cluster of pressed flowers with the comment "The bees work them well, I thought they were Spanish needles but I am not sure." The plants look a lot like Spanish needles but differ in some minor ways. There are several species of **Bidens** which bees work heavily for a surplus in different parts of the country. They look much alike, with large yellow flowers and their honey is very similar. I have had samples of Spanish needle honey from Arkansas, Missouri, Delaware and North Carolina, all a rich yellow color with a characteristic rich flavor. Spanish needles grow best in low damp ground, often near the banks of shallow streams of temporary water courses.

Friar M. Innocent of the Abbey of Gethsemani, Trappist, Kentucky, writes that "we have three bushes of Chinese Vitex that are five years old. The bees work these bushes quite energetically all summer. Brother Jerome, who is head beekeeper began last year to plant a hillside with Vitex and he has planted well over 1000 plants. This plant is very hardy and will grow well in poor soil. However, the severe cold spell this sprng has set the bushes back considerably so that few of them have attained any great size. It seems that the older the bush the greater the nectar yield. Next year we expect to obtain a good harvest from our **Vitex** provided we have good weather in the spring."

This agrees with my observations. Two large bushes of **Vitex negundo** var. **incisa** in my yard were worked steadily by bees for nearly three months this summer.

Mr. Gilbert Perigo in the Indiana Monthly News Letter reports a very good fall flow from heartsease and adds that "Keith Faulkner of Plymouth anticipates a 100-pound yield from heartsease if favorable weather continues." He further writes that fall aster looks good and adds "The old story that bees do not winter well on honey stored from late fall sources has been proven by experienced beekeepers to be largely a myth."

CURE FOR ROBBING

ONE TREATMENT which is claimed to cure a severe case of robbing is to remove the lids and mats from every hive in the yard, the theory being that the robbers are called home to defend their property. We suggest that some enterprising beekeeper give it a thorough trial and let us know the result.

From Nov. Issue of New Zealand Beekeeper

Sweet and Sour

MRS. BENJ. NIELSEN
Aurora, Nebraska

WITH THE COST of living at an all time high (where is the ceiling?) and the forecast of still higher prices for beef, many economy minded and budget conscious homemakers will lean more heavily on piggy porker for mainstay fare. In fact, by the time this reaches print, the predicted prices may be a reality, for these pages are prepared some two months in advance of publication.

So reach for the honey jar and give ol' piggy porker a whirl a la honey. And hearty eating to you!

Sweet Sour Pork

One and one-half pounds lean pork butt, 1 tablespoon sherry, ½ teaspoon salt, 2 teaspoons soy sauce, 1 tablespoon cornstarch, 2 eggs, slightly beaten, 5 cups corn flakes or 1¼ cups packaged cornflake crumbs, ½ cup white vinegar, ½ cup catsup, ⅓ cup water, ¾ cup honey, 1½ tablespoons Worcestershire Sauce, dash Tobasco Sauce, 1 carrot, thinly sliced, 2 tablespoons cornstarch, ½ cup water, 1½ cups (No. 2 can) drained and quartered sliced pineapple and ¾ cup pickle relish.

Slice pork in thin strips; remove fat. Combine sherry, salt, soy sauce, cornstarch and eggs; mix thoroughly. Add pork, refrigerate for ½ hour. If using

(Continued on page 698

Piggy Porker a la Honey makes a luscious meal. — Photo courtesy The Kellogg Company.

Brother Juan C. P. with a hive of stingless bees exposed.

Part I

Honeybees of the

BY FATHER DAVID C.P.
as narrated by BROTHER JUAN, C.P.

FOR ME THE honeybee is an interesting study and a pleasant pastime. I like to observe how each species follows out the instincts implanted in its nature by the Creator and how each bee of the species works for its own interests as well as for those of the entire colony. It is an instructive example of particular and general interest, of individual striving and collective cooperation.

"However, I one day found out what the Indians meant when they spoke of the bee that burns - much to my sorrow and pain."

Amazonic Basin

Much has been written about the life and characteristics of the European bees but the information contained in these works has only a limited application in Peru and still less application in the Amazon Basin, with the exception of a few places where these bees have been acclimated to a specific zone. We have brought in several swarms of Italian bees from the coast but they never could adapt themselves to our climate. They have always "petered" out. This has obliged me to confine my interest to the collecting and the studying of the bees that are indigenous to the region.

We are in the Peruvian part of the Amazon Basin where the climate is hot and humid and the rainfall abundant. The rains begin in November. From January to April they are frequent and usually heavy; and from that time they begin to slacken off till July when the more or less "dry" season prevails. There is not very much variation in temperature all the year round; the maximum is about 86°F. and the minimum, 76°F., with a very brief spell in June when the mercury drops to a low 64°F. It is a climate very unfavorable to the European bee; the continuous hot, moist weather is too much for them.

In the selva, a large variety of native bees are to be found. They do not attain the size or the productivity of their European brothers and they differ very much among themselves in size, color and characteristics. But they all have one thing in common, they all produce honey which varies in quantity and quality according to each species. In general, it seems that the honey production is regulated by the size and the disposition of each class of bees. The larger and the tamer they are, the more and the better grade of honey produced. And the smaller and the more vicious they are, the less and the poorer the quantity and the quality of their product.

In this region of the Huallaga River and also along the Alto Maranon, I have met with quite a number of different species. I do not know their scientific names nor am I acquainted with the names given to most of them by the Indians. We have several of the species in boxes scattered about our garden here. There are several other species that I would not have around for love or money. With me it has simply been a case of locating a hive in the jungle, which is very easy, and extracting the honey. When it appeared to be an interesting and useful species, I tried to capture the bees and bring them home to study their habits.

Bees that Burn

I had heard the Indians speak of "the bees that burn". I had met with some very vicious types of bees in my excursions into the selva and it is not easy to forget some of them. But I found it difficult to believe that there was such a thing as a bee that burns anyone. However, I one day found out what the Indians meant when they spoke of the bee that burns—much to my sorrow and pain.

One day I located a colony of bees in a hollow of a tree, the usual place

A group of three different hives showing the different internal construction of each hive.

where they are to be found. The bees were small in size and of a reddish color. The colony was a very small one. Putting on a mask and a pair of gloves, I proceeded to split open the trunk of the tree with an axe. After a minute or so, I felt a very painful, burning sensation in the nose and the throat. I said to the boy who was with me:

"I don't know what is happening to me". He yelled out: "They are burning us" and took to his heels. Those bees did not use flaming gasoline but they certainly did burn me. In spite of the gloves I was wearing, some of their poisonous burning fluid penetrated to the skin and spots appeared on the backs of my hands which were like the rash which comes from touching the leaves of the Ortega plant. They were very painful. After two days they disappeared; so did my skin. I named them the "Communist Bees" because of their red color. Their honey production was negligible. What there was to it was of a gelatine-like consistency and very poor in quality.

Another species of bee had characteristics that were reminiscent of the spider. This bee is about the size of a fly, reddish in color and stingless. I brought them home in a box and placed them in the garden. A few weeks later the box was opened to observe their activities. Most of the box was filled with thin wax-like threads which crossed the hive from right to left. None of the threads were stretched from the top to the bottom. It reminded me of the single thread web of the spider that I used to see in the early mornings in the fields of my own country. Perhaps the thin waxy lines were sticky and served to trap the unwary small intruder that ventured into the hive. I could think of no other reason for this spider-like construction. They were not for holding any kind of sacs because the honey and egg sacks hung from the top of the box. They were about the size of a garbanza or click pea and they were fastened to the top of the box by some adhesive substance. Some of the sacks contained honey, others pollen, and some others contained resin. There were no signs of egg sacks or eggs. These were very likely to come later. The wax threads must have had some definite purpose. The bees know what they are doing.

Sweet Smelling Propolis

On another trip into the jungle, I came across a smaller and somewhat similar species. The colony was cap-

tured and brought home in a box. Some weeks later, on opening the box, a very agreeable perfume came out of it. The bees had lined the walls of their hive with a very thin coating of a very highly perfumed resinous substance and filled in every crack of the box with the same substance. From the roof there were suspended a number of tiny sacks about the size of an unshelled grain of wheat. Some of the sacks contained a large number of very tiny eggs. Apparently, these were always left open because not one of them was sealed up, even though it was filled to capacity. Other sacks contained honey. Being a stingless variety, these bees did not seem to resent anyone tampering with their hive.

Bees that Bite

While all bees do not sting in defense of their hive, there are a few species that try to hold their own by biting. One species, about the size of a fly, is red and yellow in color. They can bite and bite very annoyingly anyone disturbing their supply of honey. The honey of these bees has a very peculiar taste, it is acidic, like fermented honey.

Another species of the biting bee makes a nest of earth and resin. It is formed about the trunk of a medium sized tree or on a branch. When it dries in the sun, this nest is as hard as a brick. On splitting one open, a very peculiar arrangement is laid out before the eye. The hive is divided into three compartments, one next to the other, a thin wall separates one part from the other. The compartments contained pollen, honey and eggs, each compartment being devoted to one of these products.

The peculiar thing about these biting bees is that they do not center their attack on the exposed parts of the one molesting them, that is, on the face or the hands. They go for the hair of the head. When I returned home I discovered that they had bitten off a good deal of my hair. Bees do not work blindly or erratically so they must have had some definite purpose for acting the way they did. Perhaps their natural enemy was some hairy animal and by biting off as much hair as they could, they exposed their enemy to the more effective attacks of some class of insects that preferred to molest them in particular. Bees know what they are doing.

Most Vicious Bees

Among the black bees there is one species that is outstanding for its viciousness. Their hives must not be touched unless one is very well protected by heavy clothing, thick leather gloves, a mask and a very flaming torch. Smoke is useless. It has no more effect than a gentle breeze of fresh air. Only fire and plenty of it will stop them. Even against fire they are so vicious and pertinacious in their attacks that they will attempt to fly right through the flames to get at their molester. They produce very little honey. It is better to leave these bees to the solitary enjoyment of their own exceptionally mean dispositions.

Unclean Bees

To find a bee with evidently unclean habits is indeed strange in the world of these honey producers. Yet there is one species that comes under that strange

Exposed hive of the Colmena Legitima or the Legitimate Hive Bee. Capsules at top contain honey, at the bottom they contain pollen. The central section, with horizontal wax comb for eggs is covered over.

class. It is a small and very vicious bee. It may be observed gathering up material for its hive from the excrements of animals deposited along the roads and the trails of the jungle like any common roadside beetle. Their honey production is negligible.

Door Protected Entrance

A common peculiarity characterizes two other species, viz, the manner of constructing the entrance to their hives. The entrance is made at the base of the hive. Viewed from the outside, it is a small hole such as one would see in any tree trunk. But inside, they construct a diminutive plank-shaped form of some material or other. When darkness sets in, this tiny plank is raised and serves as a door, shutting out any chance prowlers that seek to intrude their unwelcome presence into the hive.

Opposed to the average bee that makes its nest in the hollow of a tree there are two species which burrow into the ground. One of these species produces a honey that has a sharp, acrid taste; the other, called aschpa—misque, is a stingless bee which produces a fairly large supply of honey that has an agreeable flavor.

Author's note — I have had the opportunity of observing the internal construction of the hives of these two following species. The one called "Colmena Legitima" has certain potentialities which will be mentioned at the end of this article.

Two Varieties of Stingless Bees

Finally, there are two species of stingless bees whose hives present certain interesting peculiarities of construction which we will describe in detail.

The first of these two species is somewhat reminiscent of the Italian bee. It is similar in color but has longer wings in proportion to its body. Though the body is shorter than the Italian worker bee, it is, however, very much slimmer. The wings are long, transparent and black tipped. The whole ensemble is not unlike a diminutive Italian queen bee.

The hive was an ordinary box about 18 inches wide, of the same depth and twice as long. Two holes, one near the top and another close to the bottom, had been drilled for entrances. The bees proceeded to block up the bottom hole and to construct a special entrance at the top hole. From a mixture of earth and resinous material, they formed a tunnel running from the hole in the box to about six inches down the front of the hive. It resembled an elongated wasp's nest on the outside of the box. Anything larger than one of the inmates of the hive could not get through that tunnel and the narrow passage made the defense of the hive more simple and secure.

On prying off the front part of the hive, one's attention was immediately drawn to the peculiar arrangement of its interior. The hive was divided into three distinct parts, each part dedicated exclusively to one single function. One part was for the eggs, one for the pollen and one for the honey. Each one of these parts merits special consideration.

The part set aside for the eggs comprised about two-thirds of the space in the hive. It extended from the left side to about two-thirds the distance across or about 12 inches wide, from the front to the back and from the top to the bottom of the box. The egg cells were not panels or combs but an intricate tracery of heavy wax was woven throughout this space; on to this tracery, small white wax sacks were affixed.

When the queen deposited an egg in a sack, the workers packed it about with pollen and sealed it up. The larger part of the tracery, about three-fourths of its space, was filled with these suspended egg sacks. The bottom one-fourth did not have more than a scattered half dozen sacks on it. Whether this was simply an ordinary process of working or whether these eggs were set apart for future queens is not known.

The section set aside for the pollen extended from the tracery work to the opposite wall, to the depth of the box and about two-thirds of the way from the top toward the bottom of the hive. The pollen containers, like the tracery work, were built of heavy wax. In shape they resembled small cigars cut in half and piled up end on end. They did not follow a standard size pattern but varied in length and thickness.

The honey receptacles occupied the small remaining space though they did

not fill it out by half. These receptacles were very small and more or less round in shape. They were about the size of a .22 cal. short bullet head. This obvious neglect of honey storage may be readily understood when we consider that, in this continuously hot climate, there are always in bloom some flowers of one or another species. The jungle is prolific and exuberant in plant life. There is, therefore, no need for storing up food because there are no famine months in the flower world here. Sufficient for the day or for a few very rainy days meets the food requirements of the bees.

It was difficult to estimate the number of bees in the colony. But placing the number of egg sacks at between 150 and 200 or the ratio of one to five, there must have been around a bit more than a thousand bees to the hive. But then, this is the "winter" season when egg production would naturally slacken off.

Concerning the other habits of these bees, such as mating, swarming, etc., nothing definite is known. The hive has remained substantially the same over a period of five years and gives every indication of remaining in a set condition.

The other species of stingless bee is larger than the one just mentioned but it still does not come up in size to the Italian bee. This bee is called the "Colmena Legitima", the Legitimate Hive Bee. Though this species commonly makes its nest in the hollow of a tree, it readily adjusts itself to other environments and may be scooped into a box and the box placed in a garden.

[Due to the length of this article we are continuing the second part next month.—Ed.]

What A Way To Advertise!

GEORGE I. ZETLER
Duke Center, Pa.

WHILE FILLING the rack in a market, one of the clerks informed me that the manager wanted to see me. I located him and was informed that there was a jar of honey in the office that had been returned. I asked if the customer's money had been returned, and it had. Getting the jar I noticed that not over a tablespoonful had been taken from the jar and asked what the complaint had been. Too sweet. Securing a pack of wooden spoons we opened the jar and tasted it. It was good in our estimation, but not being satisfied we decided to try it on some of the customers. Giving them a wooden spoon each we asked them to taste it and give us their opinions. The first customer stated it was excellent, and wanted to buy the jar. We said it was not for sale as the manager and I were having a discussion about that particular jar of honey and wanted as many to sample it as possible. We gave samples until the jar was empty, and then found that 14 customers who had passed the rack, went back and picked up honey.

The manager stated that if we had stayed there and given out sample bits I would have had to go home and get more honey to finish out the day.

With the great number of shoppers who go through a super-market in a shopping day, how much honey could a person sell if he gave each customer a sample of honey on a piece of buttered toast or a cracker?

Mr. S. R. Aycock, Work Unit Conservation inspects a field of Ball Clover.
Photo courtesy of Soil Conservation Service.

Ball Clover · *Trifolium nigrescens*

GADEN PERKINS
St. Francisville, La.

BALL CLOVER is a native of Turkey and a valuable pasture plant of that country. It was introduced into the United States by Mr. Enlow, former Chief Agronomist of the Soil Conservation Service. Upon returning from a visit to Turkey, he brought two ounces of the seed with him.

Ball Clover has been grown experimentally (with success) in Louisiana and Mississippi for 10 or 12 years. My knowledge of it has been obtained by observing it in West Feliciana Parish, Louisiana, where I live. I work for the Soil Conservation District, and keep bees as a side line.

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Ball Clover is a re-seeding annual winter legume. The stems are hollow and grow to lengths of 18" to 36". These stems creep on the ground surface but do not root at the nodes as White Clover stems do.

The flowers are white, smaller than White Clover and very fragrant. This fragrance is noticeable at some distance.

This clover somewhat resembles Persian Clover in growth habits. It is a heavy seed producer, being ready for seed harvest during early June.

Mr. Carter Percy, a seed producer in Weyanoke, Louisiana, (West Feliciana Parish) combined 4500 pounds of clean Ball Clover seed from a 15 acre field on his home place. This field had more tonnage of clover on it than either Crimson or White Clover fields nearby.

I don't know much about the pollination angle, but there were 25 hives of bees near this field.

Thin deep sands, thin poorly drained soils, and badly eroded Loessial Hill soils have all grown Ball Clover successfully. Ball has been grown where neither White nor Crimson will grow.

A well-prepared seed bed is preferred, but this legume may be sown early (September in this section) on closely clipped sod and on a seed bed in October.

Innoculate with the same culture used for White, Crimson or Red Clover. It responds to lime and fertilizer where needed. Two pounds of seed per acre will furnish a stand if not planted over ¼" deep, but I believe four pounds, generally, wiill give a better stand the first year.

There are 1,621,500 seeds per pound (White Clover has 800,000) having a higher percentage of hard seed than other clovers.

I do not know the northern limits of this clover, but it stands the winter here as well as Crimson and White Clover, if not better.

The Plant Has Possibilities

As a honey plant Ball Clover appears to have great possibilities. I have been told by a Plant Materials Specialist of the Soil Conservation Service that bees will store about three times

(Continued on page 701)

A heavy stand of Ball Clover.

Research on improving the utilization of dairy products, animal fats, hides and leather, potatoes, fruits, tobacco, maple products and honey is carried out at the Eastern Utilization Research and Development Div. at Wyndmoor, near Philadelphia.—Photo by USDA, M. C. Audsley.

A Survey of American Honeys

1. Introduction and Average Composition [1/]

JONATHAN W. WHITE, JR.
Eastern Regional Research Laboratory
Eastern Utilization Research and Development Division
Agricultural Research Service, United States Department of Agriculture
Philadelphia 18, Pennsylvania

DURING THE PAST several years we have carried out a major analytical project involving the collection and complete chemical and physical analysis of many samples of honey from the entire United States. The results of this work are now becoming available. In the time before the complete detailed results of this work appear in print, a series of short articles describing the more important results and conclusions have been prepared.

Purpose of the Work

With hundreds of plants attractive to bees, honey is produced in each of our 50 states. Added to these sources of variation in honey, we have the potential effects of local climate and weather conditions, different soils, variations in beekeeping and farming practices, not to mention different processing operations. All of these combine to make honey potentially a most variable commodity.

The food industry in general is a large user of honey and we feel holds a potential for considerable increase. Of the several factors that seem to re-

1/ This is one in a series of articles describing a large-scale study of the composition of honeys from over the United States. Complete data interpretation and conclusions will

appear in a forthcoming Department of Agriculture publication.

tard increasing the use of honey, two that are heard most often are its variability and its relatively unknown composition. The trend in the food industry seems to be toward standardization of ingredients and increasing use of material of known composition. Honey, as a most valuable carbohydrate and one carrying unique flavoring properties, is a relatively complex material whose composition, either in general or specifically, is only imperfectly known and reported. To provide this information was the objective of this work.

Many Commercial Types Available

Of the hundreds of known floral types and blends of honey, only perhaps 25 or 30 have commercial significance. These are the bulk honeys of commerce, available year to year and providing most of the commercial beekeeper's income. Variation in these types of honey is encountered, but little accurate information is available. It has been 52 years since the Department of Agriculture published C. A. Browne's work, "Chemical Analysis and Composition of American Honeys" in which the analysis was given of 100 samples of honey from 42 floral and honeydew sources. This work has served its purpose well and is still consulted as an authoritative source of information. However, the analytical methods then used are obsolete, and great changes have taken place in agriculture and beekeeping since then.

Scope of the Work

We have had the active cooperation of hundreds of beekeepers, extension workers, local and national beekeeping organizations, for which we are deeply grateful. With their help we have collected 504 samples of honey and honeydew, originating in 47 of the 50 states and representing 83 single floral types and 93 blends of known composition, as well as four honeydew types. These were all collected from the 1956 and 1957 crops. The degree of certainty regarding floral type(s) of the samples is not absolute by any means, but depends on information supplied by the producers. For the more common and important types of honey, samples obtained from different places have given us information on variation due to area of production.

Complete Publication Coming

The full and complete description of all samples, analytical methods, individual results, and discussion of them is to appear as a U. S. Department of Agriculture Technical Bulletin. Since some time will elapse before this is available, we have prepared a series of short articles giving highlights of the work and some of the important conclusions. These will include the following subjects:

Characterization of various types of honey.
Identity of honey sugars.
Effect of crop year on composition.
Effect of area of production on composition.
Relation of granulation to composition.
Relation of color to composition.
Effect of storage on honey sugars.
Effect of storage on diastase content.

Average Composition of U. S. Honey

Using the most modern methods available, most of which are now accepted by the Association of Official Agricultural Chemists, a group of chemists at our laboratory[2/] has analyzed these samples. The results were transferred to machine punch cards and have been classified and averaged by a computer, with the cooperation of the Biometrical Services group of the Department.

2/ The sugar analyses were carried out by Mary H. Subers, Irene Kushnir, Mary L. Riethof. Others responsible for analysis of individual components are R. B. Hager, F. W. Pairent, Laverne Scroggins, Allison Smith, Ronald Campbell, Dolores Boe, and Oksana Panasiuk.

The values given in the tables are averages for 490 samples of U. S. honey and of 14 samples of honeydew. Also shown in the tables are the extreme high and low values found for each component.

Nearly all of the entries in the tables will be familiar. The levulose and dextrose are the simple sugars making up most of the honey. Sucrose (table sugar) is present in high concentration in nectar from which honey is made. Maltose represents a group of more complex sugars that will be discussed at more length in a later article. Higher sugars is a more descriptive term for the material formerly called honey dextrin.

The undertermined value is found by adding all the sugar percentages to the

Table 1. Average Composition of Honey and Range of Values Among 490 Samples

Color 1/	Average Dark half of White	Range Light half Water-White to Dark
Granulating tendency 2/	Few clumps of crystals, ⅛-¼" layer	Liquid to complete hard granulation
Moisture (%)	17.2	13.4 - 22.9
Levulose (%)	38.19	27.25 - 44.26
Dextrose (%)	31.28	22.03 - 40.75
Sucrose (%)	1.31	0.25 - 7.57
Maltose (%)	7.31	2.74 - 15.98
Higher Sugars (%)	1.50	0.13 - 8.49
Undetermined (%)	3.1	0.0 - 13.2
pH	3.91	3.42 - 6.10
Free Acidity (meq./kg.)	22.03	6.75 - 47.19
Lactone (meq./kg.)	7.11	0.00 - 18.76
Total Acidity (meq./kg.)	29.12	8.68 - 59.49
Lactone ÷ Free Acid	0.335	0.00 - 0.950
Ash (%)	0.169	0.020 - 1.028
Nitrogen (%)	0.041	0.000 - 0.133
Diastase 3/	20.8	2.1 - 61.2

1/ Expressed in terms of USDA color classes.
2/ Extent of granulation for a heated sample after six months undisturbed storage.
3/ 270 samples.

Table 2. Average Composition of Honeydew and Range of Values Among 14 Samples

Color	Average Light half of Amber	Range Dark half of Extra Light Amber, to Dark
Granulating tendency	1/16-⅛" layer crystals	Liquid to complete soft granulation
Moisture (%)	16.3	12.2 - 18.2
Levulose (%)	31.80	23.91 - 38.12
Dextrose (%)	26.08	19.23 - 31.86
Sucrose (%)	0.80	0.44 - 1.14
Maltose (%)	8.80	5.11 - 12.48
Higher Sugars (%)	4.70	1.28 - 11.50
Undetermined (%)	10.1	2.7 - 22.4
pH	4.45	3.90 - 4.88
Free Acidity (meq./kg.)	49.07	30.29 - 66.02
Lactone (meq./kg.)	5.80	0.36 - 14.09
Total Acidity (meq./kg.)	54.88	34.62 - 76.49
Lactone ÷ Free Acid	0.127	0.007 - 0.385
Ash (%)	0.736	0.212 - 1.185
Nitrogen (%)	0.100	0.047 - 0.223
Diastase 1/	31.9	6.7 - 48.4

1/ Four samples only.

moisture value and subtracting from 100. The active acidity of a material is expressed as pH; the larger the number, the lower is the active acidity. The lactone is a newly found component of honey; lactones may be considered to be a reserve acidity, since by chemically adding water to them ("hydrolysis") an acid is formed. The ash is, of course, the material remaining after the honey is burned and represents mineral matter. The nitrogen is a measure of the protein material, including the enzymes, and diastase is a specific starch-digesting enzyme.

Most of these are expressed in per cent, that is, parts per hundred of honey. The acidity is reported differently. In earlier times acidity was reported

(Continued on page 701)

Talks To Beekeepers

M. J. DEYELL

In past talks I have referred to the aster honey flow that usually occurs in this area during the last few days in September and the first part of October. During the month of September we had an excellent honey flow from goldenrod. The scale hive gained 59 pounds during September. A light frost a few nights ago destroyed practically all of the goldenrod, or perhaps I should say withered the blossoms. The white aster in this area (October 6) is now almost in full bloom and bees are working it. Yesterday the temperature reached 72°F., and the scale hive made a slight gain of 2½ pounds. Bees were working furiously bringing in nectar and pollen. To determine the number of bees flying I sometimes stand directly in front of the hive entrance for about half a minute, then step aside to see the bees pile into the hive entrance. Bees filled with nectar will put up with this, if not repeated too often.

At this season of the year the queen restricts her egg laying and more honey is stored in the brood chamber in cells adjacent to the brood, than is the case earlier when the weather is warmer. This is as it should be, because colonies do require an ample amount of food for winter stores.

I notice bees carrying an unusual amount of pollen. If it is not needed for brood rearing this fall it will be needed early next spring. The bees fill the combs in the brood chamber about half full of pollen, then store honey on top of the pollen. The honey on top will preserve the pollen until it is needed early next spring, perhaps at a time when the weather is too cool for bees to collect pollen from natural sources. This is one reason why it is unwise to tamper too much with brood chambers late in the fall. The bees know what they should have, perhaps better than the owner does.

Aster, a Life-Saver

There are at least four kinds of aster in this area. I don't know their botanical names but I call them the large white, small white, large purple and the small purple asters. It is the small white aster, sometimes called frost aster, that seems to give the most nectar in this area. When conditions are just right strong colonies will store a surplus of honey in early October. I once had a yard that averaged a surplus of 75 pounds from October 1st to the 15th. That was rather unusual. Weather conditions were right for nectar secretion and there was an abundance of aster. If the goldenrod which precedes the aster fails to secrete nectar we can depend on white or frost aster as it is sometimes called, to enable the bees to pack the brood chamber with winter stores. If the weather is warm enough following the late flow for the bees to ripen the honey it seems to be suitable for winter bee food.

An Observation Regarding Bumblebees

Just recently I was examining some purple aster and goldenrod bloom near one of my apiaries and noticed that a bumblebee would visit the aster bloom, then the goldenrod, then the aster. We are told, and I presume it is a fact, that honeybees when they get started visiting goldenrod or any other nectar plant for that matter will continue visiting that plant while it secretes nectar. This has been referred to as "the constancy of the honeybee". This is one reason why honeybees are so valuable for pollinating farm crops as well as fruit orchards.

NEWS and EVENTS

MINNESOTA
Minnesota Beekeepers Meet
December 3, 1960

The Minnesota Beekeepers' Association will hold their winter meeting December 3, 1960 at the Curtis Hotel, Minneapolis, Minn. with the program commencing promptly at 10 a. m. Walter Sundberg, chairman of the Registration Revision Committee will give a detailed report on meeting with the Interim Committee and the recommended changes that were made by the committee. C. D. Floyd will report on National Marketing and Federation Report. Glen McCoy, chairman of the Honey Grade Committee will report on the decision of his committee.

Dr. Thomas Gochnauer will speak on Residues in Honey. Dr. Cole will address the group.

A number of successful beekeepers will participate in a topic "Practical Practices By Beekeepers" which promises to be very instructive. Usual business meeting with election of officers and the various committees making their reports. Evening banquet with slides by Charley Hofmann will complete the day. Each member is urged to get one new member before this meeting and all beekeepers are welcome at this meeting.—F. Q. Bunch, Secretary.

CALIFORNIA
State Beekeepers' Association
Bakersfield, California
December 5, 6, 7, and 8

The Greater Bakersfield Chamber of Commerce and its Convention and Visitors' Bureau join the Executive Committee of the California State Beekeepers' Association in extending a most cordial welcome to you at the forthcoming state convention in Bakersfield, December 5, 6, 7 and 8, 1960.

Bakersfield, considered America's newest city, has a metropolitan population of approximately 160,000 and is rapidly becoming famous as an outstanding convention city. Our location is almost the exact geographic center of the state. It is easily accessible by car, train or bus, and our new Kern County Airport (Meadows Fie'd) is serviced by two major air lines. Recent improvements on Highways 466 and 99 have brought us even closer to cities in the southern and eastern sections of the state.

You will find both rooms and meals in the Bakersfield area are considered to be more moderately priced than in other convention cities. For your convenience in parking, courtesy s'ickers will be provided through our local police department.

We look forward to having you in our city where hospitality is a tradition. —Walter L. Rowse, President, Greater Bakersfield Chamber of Commerce; Dick Harris, President, California State Beekeepers' Association.

MINNESOTA
Southeastern Beekeepers' Association
Zumbrota, Minnesota
November 19, 1960

The annual meeting of the Southeastern Minnesota Beekeepers' Association will be held at Zumbrota, Minnesota in the R.E.A. Community room on November 19. The meeting will start at 10:00 A.M. and will be temporarily adjourned at 12:00 noon. Arrangements have been made for all attending to have dinner at Rays Cafe in their new dining room. This will be an opportune time to take your wife out to that dinner you have been promising her and take in the beekeepers' meeting at the same time.—Lyle Dankers, Secretary.

WORCESTER COUNTY
Beekeepers' Association
October 15, 1960

The last meeting of the Worcester County Beekeepers' Association was held at the Worcester County Extension Service, 36 Howard Street, Worcester, on October 15, 1960.

At the August meeting the following were elected as officers of the association, Peter Stapor, President; Carl Larson, Vice President; Henry Parker, Treasurer; Mrs. K. G. A. Anderson, Secretary; and Philip Pike, Past President as a Director.—Glenn T. McLain, Jr.

ALABAMA
Beekeepers' Association
Montgomery, Alabama
November 17 and 18

The Alabama Beekeepers' Association meeting will be held on November 17 and 18 at the Holliday Inn on the outskirts of Montgomery. A worthwhile program is being arranged. A cordial invitation to all.

FLORIDA
State Beekeepers' Association
Miami, Florida
October 21-22nd

The 40th annual meeting of the Florida State Beekeepers' Association was held at the Everglades Hotel in Miami, Florida on October 21 and 22. —F. A. Robinson, Secretary.

PENNSYLVANIA
Montgomery Co. Beekeepers' Assn.
Trappe, Pennsylvania
November 10, 1960

The Montgomery County Beekeepers' Association annual meeting and banquet will be held November 10th, 1960 at 7:00 P.M.. The caterer will be Mrs. Moorehead of 40 First Avenue, Trappe, Pennsylvania, near Collegeville, (Route 422). Price of the dinner is $2.50 (including tax and tip). A program of interest to all has been planned. Election of officers and a short business meeting after the banquet. Please make reservations with the Secretary before November 1st, accompanied with payment. Bring family and friends—more tickets are available. —Mrs. A. C. Storm, Secretary, 637 Norristown Road, Horsham, Pennsylvania, Phone: Mi 6-6553.

KANSAS
Northeastern Beekeepers' Association
Muncie, Kansas
November 6, 1960

All members of the Northeastern Kansas Beekeepers' Association and any others interested, are cordially invited to attend the next meeting of the Association to be held Sunday, November 6, 2:30 P.M. at the home of President Mr. and Mrs. Maynard D. Curtis, 9505 Kansas Ave., Muncie, Kansas.

Mr. James F. Wilson of Kansas City, Kansas will give a rebuttal to The Kansas City Star on the subject, "Do Bees Harm Vegetation, or Carry Disease Germs to Man"?

Films will be shown, "The Honeybee" and an entertaining film by the Adams Dairy Company.

Refreshments will be served following adjournment of the meeting.—R. F. Ferguson, Association Editor.

ILLINOIS
State Beekeepers' Association
70th Annual Convention
Springfield, Illinois
November 5 & 6, 1960

At the banquet on the evening of the 5th, Dr. V. G. Milum of the University of Illinois will give a travelog entitled "Apiculture in Europe", based on his recent European tour and illustrated by colored slides. Dr. G. H. Cale, Jr., will speak on Hybrid bees. Chief Inspector for Illinois, Carl E. Killion is scheduled for "What's in The Future for Illinois Beekeepers". Mr. J. A. Ewing, Agricultural Statistician in charge of Illinois Cooperative Crop Reporting Service, will be on hand to give visitors a peek at his office's work. —Hoyt Taylor, Secretary.

IDAHO
State Honey Producers' Association
Boise, Idaho
November 18 and 19, 1960

At a meeting of the officers of the Idaho State Honey Producers' Association it was decided to hold the annual convention of the Idaho State Honey Producers' Association at Boise, Idaho, November 18th and 19th, 1960.

A news letter will be sent to all members of the Association and to all licensed beekeepers of the State.—Orville C. Cox, Secretary-Treasurer.

AMERICAN BEEKEEPING FED.
OMAHA, NEBRASKA
February 1-3, 1961

The annual meeting of the American Beekeeping Federation will be held in Omaha, Nebr., February 1-3, 1961.

32nd ANNUAL CONVENTION
Southern States Beekeepers' Federation
Chattanooga, Tennessee
November 14-15, 1960

MONDAY, NOVEMBER 14, 1960

9:00 Call to Order by President Jensen
Invocation—Ray B. Slagle, Chattanooga, Tennessee.
Address of Welcome—Leslie H. Little, State Apiarist, Nashville, Tenn.
Response and Remarks—Dr. F. E. Guyton, Auburn, Alabama.
President's Address—Eugene Jensen

10:00 Effects of Chemicals, Drugs and Antibiotics Used in Beekeeping Practices—Dr. Clayton L. Farrar, Head, Bee Culture Sec. USDA, Madison, Wis.
Questions and Answers

1:00 Royal Jelly Research—R. B. Willson, Chairman, Board of Directors, Royal Jelly Research Fdn., New York.

1:30 The Services of the American Honey Institute—Mrs. Harriett Grace, Director, American Honey Institute, Madison, Wisconsin.

2:00 Honey and Its Uses as Food—Miss Eleanor Birdsong, University of Tenn., Marketing-Consumer Information

2:45 Winter Beekeeping Management—W. A. Stephen, Exten. Beekeeper, State College, Raleigh, N. C.

3:30 Kentucky Program for Beekeepers—Tommy Hines, State Apiarist, Morgantown, Ky.

6:30 Annual Banquet, Hotel Patton
Master of Ceremonies—Alan Root, Gen. Mgr. The A. I. Root Co., Medina, O.
Guests of Honor—Miss Monicca McNutt, American Honey Queen, Nashville, Tenn. and Miss Betty Myers, Chattanooga Honey Queen, Harrison, Tennessee
Elements to Consider in Marketing Honey—C. D. Floyd, Chairman, Marketing Committee, American Beekeeping Fed. and Supervisor, Sec. of Apiary Inspection, St. Paul, Minn

TUESDAY, NOVEMBER 15, 1960

9:00 Call to Order by President Jensen
Beekeeping with Drugs—Walter T. Kelley, President, The Walter T. Kelley Co., Clarkson, Ky.

9:30 Honey Industry Council, What it is and what it is doing for you—Millard Coggshall, Chairman, Honey Industry Council of America, Minneola, Florida

10:15 Greetings from the American Beekeeping Federation—L. R. Budge, Pres., Malad, Idaho

10:55 Producing and Packing Southern Honey—Harvey F. York, Jr., President, York Bee Company, Jesup, Ga.

11:15 The Bee Quiz—John Amos, Virginia Polytechnic Institute, Blacksburg, Va.

HONEY
Production and Stocks
(AMS Report)

As of October 10, 1960, crop is estimated at 253,254,000 pounds, two per cent more than 247,523,000 produced in 1959 and six per cent more than 1954-58 average production. Crop is being produced by 5,403,000 colonies of bees, about one per cent below colonies on hand in 1959. Production per colony averaged 46.9 pounds, compared with 45.5 in 1959 and 1954-58 average of 44.4. In mid September, beekeepers had about 94 million pounds of honey on hand for sale, 37 per cent of estimated 1960 production.

MIDWESTERN
Beekeepers' Association
Kansas City, Missouri
November 13, 1960

The Midwestern Beekeepers' Association will hold its regular monthly meeting in the I.O.O.F. Hall, 812 Westport Road, Kansas City, Missouri, at 2:30 P.M., Sunday, November 13, 1960. Nomination of Officers will be held. There will be a speaker, also the usual Question and Answer session. Refreshments will be served. Please attend. Everyone welcome.—James A. Worrel, Secretary.

OREGON
Lane County Host to Oregon State Beekeepers' Association
Eugene, Oregon
December 2 and 3, 1960

Lane County beekeepers will be host to the Oregon State Beekeepers' Association, December 2 and 3, 1960, at the Osborn Hotel in Eugene, Oregon. The program will be of interest to anyone interested in bees, with Dr. Wm. P. Stephen of Oregon State College in charge of a special study on bee behavior.—Oliver Petty, Secretary.

MONTANA
State Beekeepers' Association
Livingston, Montana
December 2, and 3, 1960

The Montana State Beekeepers' Association will hold their annual convention, December 2nd and 3rd, at 9:00 A.M. in Livingston, Montana. Headquarters will be in the Murray Hotel and all meetings will be held across the street in the Masonic Temple building. Prominent speakers will be heard, reports and a general discussion on problems facing the Montana beekeepers and our industry. Labor and time

saving devices developed by Montana beekeepers will be on display at the Hall's Honey House. Banquet and entertainment Friday evening, December 2nd. All beekeepers and friends are most cordially invited. — Mrs. O. R. Burdett, Sec.-Treas.

LOUISIANA
Beekeepers' Association to Meet at Baton Rouge, Louisiana

The Louisiana Beekeeping Association will hold its annual meeting in December in the Capitol Building in Baton Rouge. No date has been set as yet. Further details can be obtained from: Mr. Joseph J. Perry, 2328 Aster Street, Lake Charles, Louisiana.

WASHINGTON
State Beekeepers' Association Everett, Washington December 2 and 3, 1960

Our annual State Beekeepers' Association Convention is to be held in Everett, Washington, at the Monte Cristo Hotel on December 2 and 3, 1960.—Mrs. E. B. Purchase, Secretary-Treasurer.

(Continued on page 697)

Obituary

MRS. D. D. STOVER

MRS. D. D. STOVER, Mayhew, Mississippi, wife of the late Mr. Stover, queen and bee breeder, who passed on some years ago, died September 16, at the age of 76, following a long illness. The Stovers will long be remembered for their service to the beekeeping industry. The business they started over 40 years ago is still flourishing under the name of The Stover Apiaries, Mayhew, Missippi.

Deadline for announcements for "News and Events" must be in the Gleanings office before the 10th of the month preceding date of issue.

When Answering Advertisements, Please Mention GLEANINGS IN BEE CULTURE

Prospecting for New Customers?
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The Bee Magazine With The Largest Circulation

Many of our thousands of readers wish they knew how to buy from you. The most inexpensive way to let them know is to advertise in Gleanings. For over 85 years Gleanings has been taking the work out of selling.

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Classified rates: 18¢ per counted word, each insertion. Each initial, each word in names and addresses, the shortest word such as "a" and the longest word possible for the advertiser to use, as well as any number (regardless of how many figures in it) count as one word. Copy should be in by the 10th of the month, preceding publication.

HONEY FOR SALE

WE BUY AND SELL all varieties of honey. Any quantity. Write us for best prices obtainable. HUBBARD APIARIES, ONSTED, MICHIGAN.

IOWA HONEY, one can or truck loads. RUSSELL D. SMALLEY, BEAVER, IOWA.

CLOVER extracted honey in sixties. ABRAM BRUBAKER, 1525 September Dr., LANCASTER, PA.

TUPELO, wild flower, alfalfa, or orange, in 60's. LANCASTER COUNTY DUTCH GOLD APIARIES, 910 State St., LANCASTER, PA.

HONEY—In any size container, also Mail Order Dealer for Bee Supplies. Write for prices. L. E. ALLEN, TIPTON, MICH.

MICHIGAN'S finest raspberry, basswood, clover comb honey in 4 x 5 window cartoned sections. Deluxe extra fancy, $9.50; Extra fancy, $8.50; Fancy, $7.50; No. 1, $6.50; No. 2, $5.50 case. E Z QUICK WAY B FARMS, BOYNE FALLS, MICHIGAN.

MICHIGAN'S FINEST WHITE CLOVER HONEY. New sixties. Fully ripened. Sample 25¢. JOHN McCOLL, TECUMSEH, MICHIGAN.

EXTRACTED HONEY for sale. Open top drums. MISSISSIPPI VALLEY APIARIES, 103 Hillside Circle, VICKSBURG, MISSISSIPPI.

FOR SALE—Bulk comb honey, white, good quality, by truckload. ROBINS APIARIES, KENNETT, MISSOURI.

FANCY and No. 1 clover comb honey. Write for prices. J. McGINNITY, EDGERTON, WISCONSIN.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTICE — We cannot guarantee honey buyers' financial responsibility, and advise all beekeepers to sell for cash only or on C.O.D. terms except where the buyer has thoroughly established his credit with the seller.

WANTED—All grades of extracted honey. Send sample and price. DEER CREEK HONEY FARMS, LONDON, OHIO.

CASH FOR BEESWAX. Write as to quantity and we will quote price. MUENCH-KREUZER CANDLE CO., INC., SYRACUSE, N. Y.

WANTED—White extracted or comb honey. Send sample. MILLERSPORT HONEY CO., MILLERSPORT, OHIO.

BEESWAX WANTED—Highest prices paid in cash or trade for bee supplies. THE A. I. ROOT CO., MEDINA, OHIO; COUNCIL BLUFFS, IOWA; SAN ANTONIO, TEXAS.

WRITE FOR SHIPPING TAGS and quotations on rendered beeswax. We buy from one pound up and if you have over 25 pounds let us work it into foundation for you at a 25 per cent saving. WALTER T. KELLEY CO., CLARKSON, KY.

WANTED—Light amber clover, fall flowers, buckwheat and white clover. Send sample and lowest price. CLOVERDALE HONEY CO., FREDONIA, N. Y.

WANTED—Buckwheat and light amber honey. EASTERN FOOD PRODUCTS, 421 Bedford Ave., BROOKLYN, N. Y.

HONEY WANTED for bottling, all types in drums, tins, trailer and car lots. Send samples each lot. Write: CHAS. E. FARRIS CO., 99 Hudson St., NEW YORK CITY. Est. since 1910.

WANTED—Honey in 60 pound cans, also beeswax any quantity. L. E. ALLEN, TIPTON, MICHIGAN.

ALL GRADES extracted honey wanted in both 60 pound cans and 600 pound drums. PRAIRIE VIEW HONEY CO., 12303 12th St., DETROIT 6, MICHIGAN.

WANTED, chunk comb and extracted honey. Mail sample and price. STOLLER HONEY FARMS, LATTY, OHIO.

WE RENDER cappings, old combs and buy your beeswax. Shipping tags sent on request. M. R. CARY CORP., GPO Box 818, SYRACUSE 1, NEW YORK.

WANTED: Honey—water-white, light amber and buckwheat extracted and comb. Send samples and prices. M. R. CARY CORP., GPO Box 818, SYRACUSE 1, NEW YORK.

WANTED — Chunk and extracted honey. Send sample and price. RONALD CULP, CIRCLEVILLE, OHIO.

WANTED—Honey and Beeswax. WALLY'S BEE ENTERPRISE, 4900 Morningside, SIOUX CITY, IOWA.

FOR SALE

WRITE FOR CATALOG—Quality Bee Supplies at factory prices. Prompt shipment. Satisfaction guaranteed. HUBBARD APIARIES, Manufacturers of Beekeepers' Supplies and Comb Foundation, ONSTED, MICHIGAN.

THE BIGGEST Bee Supply Catalog published (64 pages) free for the asking. Listing many items not found in other catalogs. No agents—buy direct and save 20%. WALTER T. KELLEY CO., CLARKSON, KENTUCKY.

QUEENBEE PAINTING OUTFITS, $1.50. INTERLOOKERS, $3.00 postpaid. SOUTHWICK APIARIES, WABAN, MASS.

FREE CATALOG—Cypress bee hives and bee supplies. Save up to 40% on hives that last. MYERS CRAFT MANUFACTURING CO., BURGAW, NORTH CAROLINA.

WESTERN PINE BEE SUPPLIES, frames and supers. Cedar tops and bottoms. Let us bid on your lumber needs. Truck load lots a specialty. A lifetime among the bees. MOUNTAIN BLOSSOM HONEY FARM, 1954 Scenic Ave., CENTRAL POINT, OREGON.

FOR SALE—Modern, up-to-date California package bee and queen rearing outfit. With or without warehouses. Bees on well established locations. Annual gross income, $35,000 to $40,000. Terms to right party. For information write Box 98 Gleanings.

FOR SALE—Complete, modern, up-to-date, fully equipped bee business. 700 colonies. 40 by 80 two story honey house. Three bedroom modern home. Retiring. J. D. HARRAH, CHARLO, MONT.

BEFORE YOU SELL your honey or buy your honey containers see HUBBARD APIARIES, ONSTED, MICHIGAN.

TWO COMPLETE Extracting outfits, used. One 45-frame extractor, one 30-frame extractor, two 50-frame Merry-Go-Rounds, one Brand melter. HUBBARD APIARIES, ONSTED, MICHIGAN.

FOR SALE - - - - - HALF OUR BEES. 3,000 one story 10-frame colonies. No AFB. Good condition - honey for winter - FOB central California. $6.50 each in lots of 500 or more. ART HARRISON, Box 602, LOS BANOS, CALIFORNIA.

WE HAVE FOR SALE—1 Honey Bottling Machine, 1 Honey Flash Heater, 1 Honey Bottling Tank, 1 Honey Filter, 1 Honey Refractometer. HUBBARD APIARIES, ONSTED, MICHIGAN.

$ $ $ $ SAVE FACTORY PRICES—Check our prices before you buy. Send for free catalog. KEHM BROTHERS APIARIES, Box 346, Route 1, GRAND ISLAND, NEBRASKA.

20 COLONIES of Caucasians, 2 story hives, excellent comb honey bees, no AFB. ALBERT HALSEY, BURR OAK, MICH.

SASSAFRAS ROOTS for fragrant, refreshing tea. Unusual, long lasting gift. ½ pound dried, $1.50 postpaid. Check or money order. DOROTHY LOFTIN, CRAWFORDVILLE, FLA.

FOR SALE—Three 50 frame Woodman, one 20 frame Root, one 8 frame basket extractors. 1,000 10 frame full depth supers with combs and many miscellaneous items, - Superior capping soin dry. WALLY'S BEE ENTERPRISE, 4900 Morningside, SIOUX CITY, IOWA.

BEES AND QUEENS FOR SALE

WE USE ALL POSSIBLE CARE in accepting advertisements but we cannot be held responsible in case disease occurs among bees sold or if dissatisfaction occurs. We suggest that prospective buyers ask for certificate of inspection as a matter of precaution.

CARNIOLAN and CAUCASIAN BEES for 1960. Booking queens. Each, $1.00; 2-pound bees with queen, $4.00. 3-pound bees with queen, $5.00. LEWIS & TILLERY BEE CO., Rt. 3, Box 251, DU 2-8371, GREENVILLE, ALA.

QUALITY ITALIAN QUEENS—Each $1.00; 5 or more, 90¢ each; 25 or more, 85¢ each. A. G. WOODMAN CO., GRAND RAPIDS, MICH. or LENA, S. C.

200 HIVES BEES, standard 10 frame 2 story equipment with 75 pounds or more honey for winter. One super of combs with each hive. Will give inspector's O.K. $8.00 per swarm. GEO. WALTHOUSEN, 755 State Street, SCHENECTADY, N. Y.

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Improved designs, embodying color, balance, simplicity, and distinction. Please send for free samples & prices.
C. W. AEPPLER COMPANY
Oconomowoc, Wisconsin

"SWARMING STOPPED COLD"
95% Foolproof
No Gimmicks
No Gadgets
No Tricks
Bigger Crops - Better Beekeeping
Full Directions Price $1.00
BAKER'S APIARIES
Glencoe Illinois

J. E. WING & SONS
48 Years Continuous Service
Italian Package Bees
and Queens
Our Specialty
Knights Landing, Calif.

ITALIAN
Package Bees
and
Queens
JOHN S. SHACKELFORD
Rio Oso, California
Phone: Wheatland, Calif. NEptune 3-2392

LITTLE'S Italian Queens
1 to 24 ..... $1.45
25 to 99 ..... 1.35
100 and Up 1.25
Until June 15
ROYAL JELLY
Bulk & Capsules. Write for Prices.
LITTLE'S APIARIES
Shelbyville, Tennessee

HONEY WANTED
Carloads and less than carloads. Mail sample and best prices in all grades.
W. F. STRAUB & CO.
5520 Northwest Highway Chicago 30, Ill.

ROYAL JELLY

ROYAL JELLY—$8.00 per ounce, postpaid. Write for prices in large lots. THE STOVER APIARIES, MAYHEW, MISS.

SUPER STRENGTH 100 mg. Royal Jelly capsules in bottles of 100 for $10.00. PRAIRIE VIEW HONEY CO., 12303 Twelfth St., DETROIT 6, MICHIGAN.

12 pounds ROYAL JELLY at $10.00 per ounce. GARON BEE COMPANY, DONALDSONVILLE, LA.

MISCELLANEOUS

BEES REMOVED from house or tree or hive without touching either house or bees. Bees will then move honey into hive. Save property, honey, and bees with my method. Send $2.00 for details. Satisfaction guaranteed. GEORGE HAWKINS, Rt. 1, LAWSON, MO.

RENDERING every day in our all new plant. All honey saved from cappings. Rendering slumgum and old combs. Write for free shipping tags and rates. HUBBARD APIARIES, ONSTED, MICHIGAN.

WANDA BIO PRODUCTS, Dept. B, 6531 Euclid, CLEVELAND 3, OHIO offers a large variety of Natural Vitamins and Organic Foods. Mail-Order catalog FREE.

WANTED

LARGE BEE SUPPLY Manufacturer and Honey Processor wants Supply Dealers and Honey Buyers. Write for Catalog and Honey Prices. HUBBARD APIARIES, ONSTED, MICH.

TO BUY established apiary in good honey producing area. JIM PERKINS, 210W Cypress, VISALIA, CALIFORNIA.

WANTED small and large lots of bees and equipment, including extractors. HUBBARD APIARIES, ONSTED, MICH.

PURE ASTER HONEY, any amount. ROBT. W. LANE, 509 Maple Avenue, GREENEVILLE, TENNESSEE.

SEEDS

HONEY PLANTS our specialty. Catalog on request. PELLET GARDENS, ATLANTIC, IOWA.

MAGAZINES

PROFIT AND HEALTH—Raise dairy goats. Learn how. Monthly magazine. $2 yearly; sample and information 25¢. DAIRY GOAT JOURNAL, COLUMBIA T3, MISSOURI.

THE SCOTTISH BEEKEEPER (The official organ of the Scottish Beekeepers' Association.) Scottish in character, international in appeal. Annual subscription $2 post free. Sample copy from ROBERT N. H. SKILLING, F.S.C.T., 87 King St., KILMARNOCK, AYSHIRE.

INDIAN BEE JOURNAL, know interesting facts concerning the honeybees of India. The only Bee Journal of India published in English. Subscription Rs. 12/- or Sh. 17/6d (Sterling) or $2.75 per year (INTERNATIONAL M.O.). Sample copy 2s. or 25 cents. Can be had from The Managing Editor, Indian Bee Journal, Naini Tal, U.P., India.

ARCHIV FUR BIENKUNDE, International journal for Bee Culture and beekeeping economics. Founded in the fall of 1918. Oldest economic bee journal in the world. Praised again and again for its decades of independent leadership through many endorsements and advice as a valuable source also for the practice. Classic. Yearly DM 5.50. Any aspiring beekeeping friend will receive a sample copy. BIENEN VERLAG, GIELBELBACHSTR, 19, LINDAU (B) GERMANY.

DO YOU FIND it difficult to secure information about sheep and sheep ranching methods? The SHEEP AND GOAT RAISER reaches more sheepmen with more information on range sheep than any other magazine published. Subscription, $3.00. Box 189, SAN ANGELO, TEXAS.

BEE WORLD, the international journal of the Bee Research Association published monthly, contains the latest research reports on bees and beekeeping. With Apicultural Abstracts it costs $5.50 per annum, or $6.00 including membership of the Bee Research Association. Apicultural Abstracts only $4.50 per annum from the Hon. Subscription Secretary, Bee Research Association, 10 BARNETT WOOD LANE, ASHTEAD, SURREY, ENG.

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Do You Have Something to Sell?
Do You Want to Buy Something?
Do You Need Help?
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If you do then send us your ad and let our Classified Department handle your problems. You will be more than satisfied with the results.

25 cents for 8 - 9 oz.
of your honey in our plastic comb honey section
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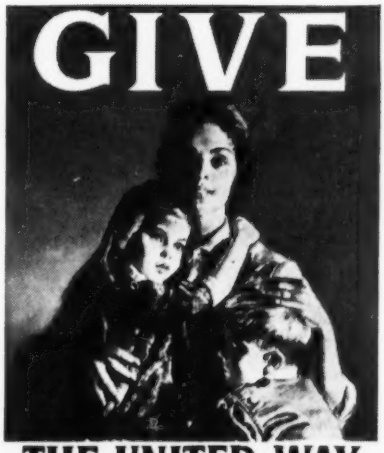

THE UNITED WAY

LIVE AND LEARN

(Continued from page 674)

used to be the living room to what used to be the kitchen, where I have my extracting equipment set up. The bees were coming in from under the house through a crack where that step joined the two rooms together. Eliminating that entrance was a problem. If I had an arm with a universal joint instead of an elbow, maybe I could have reached the hole and plugged it with steel wool like I did the other big holes. There was sort of a dog leg under the step, and since I can't seem to throw dirt around a corner, that idea didn't work either.

The number of bees getting through that hole was not enough to make an issue of the thing, but what bothered me was that they would go home and tell the gang how they got in, and I would be in trouble again. There just didn't seem to be any way that I could stop up that hole without tearing down that step and nailing a board over it. That would have delayed operations quite a bit, because that is the extrance to the extracting room, and I was in no mood to break my neck stepping up where the step ought to be. The door to the outside was blocked off with full supers, and no place else to put them.

My eyes lit on that sprayer again. I shook it. Yep, sure enough, there was about a quart of solution left. So I pumped up as much pressure as I could, got down on my stomach and crawled like a snake up as close as I could get to that hole, and let drive with the disinfectant. I didn't use the spray, but opened it up wide and squirted a solid stream all over the bottom of the floor until there was no more left.

Thank goodness that did it. I finished my extracting and bottling without a bee in the house. And, to end this tale of woe on a pleasant note, after all my fears about not making a crop, I got 1,297 pounds of honey in the bottles from 23 colonies. The comb honey was a flop. I got 32 salable sections out of four colonies run for comb honey. The rest of the culls went into the melter.

ITALIAN QUEENS

We can still supply a limited number of young queens.

Prices

1 - 9	$1.00
10-49	.90
50-up	.80

THE WILBANKS APIARIES
Claxton, Georgia

Many thanks for the nice business you have given us this year.

Our aim is to always please you and if we don't, please tell us.

The Stover Apiaries

Mayhew, Miss.

NEWS AND EVENTS

(Continued from page 693)

TEXAS
Beekeepers' Association
Houston, Texas

The Houston Beekeepers' Association held a field meeting at the home of Mr. and Mrs. E. A. Collenius, 1202 Bingle Road, Houston, Texas, and had as honored guest Mr. T. E. Kane of Hallettsville, Texas and Mr. J. E. Hastings formerly of Canada, a breeder of the famous Caucasian queens. Mr. Hastings is now associated with the Kane Apiaries of Hallettsville, Texas.

Both Mr. Kane and Mr. Hastings were very happy to answer in detail, all questions that were asked of them. There were more than 35 persons at this meet, and all had a wonderful time. Refreshments were served by Mr. and Mrs. Collenius.—Adolph Kaska, President.

BETTER BRED QUEENS
Three Banded Italians
Thanks for your patronage in 1960.
Now booking orders for 1961.
CALVERT APIARIES
CALVERT, ALA.

FOR 1961
CALIFORNIA CAUCASIANS
Don J. Strachan
Rt. 2, Box 325 Yuba City, Calif.

We wish to THANK each and everyone of our customers for a very good season.
1961 Prices

2-lb.	pkg.	w/q	$3.75
3-lb.	pkg.	w/q	4.75
4-lb.	pkg.	w/q	5.75

NORMAN BEE CO.
RT. 1 RAMER, ALA.

BRITISH BEE JOURNAL
The Only FORTNIGHTLY Bee Journal in the World
Subscription price £1.10 per annum, post free, six months 11/6d. post free and three months 6/3d. post free.
Keep up-to-date in Beekeeping by taking out a subscription now through our agents:
Gleanings in Bee Culture
Medina, Ohio

QUEENS STILL AVAILABLE

DADANT		JENSEN'S	
Starline Hybrid		Magnolia State	
1-25	25-99	1-25	25-99
$1.30	$1.20	$1.00	$ .90
100 up		100 up	
$1.00		$ .80	

JENSEN'S APIARIES
MACON, MISS.

Italian Queens
$1.10
W. E. Plant
Rt. 2 Hattiesburg, Miss.

SWEET AND SOUR

(Continued from page 677)

cornflakes, crush into fine crumbs. Drain meat; roll in cornflake crumbs. Fry in deep hot fat (350° F.) about 7 minutes or until golden brown.

Combine vinegar, catsup, water, honey, Worcestershire Sauce and Tabasco Sauce; bring to boiling point; add carrots and cook 5 minutes. Blend cornstarch and water; add to vinegar mixture; cook, stirring until thickened. Add pork, pineapple and pickle relish. Heat. Serve on fluffy rice. Yield: 6 servings, 1 cup each.

Honey Glazed Picnic Shoulder

Five to 7 pounds fully-cooked picnic shoulder, ¼ cup vinegar, ½ cup honey, 1 tablespoon butter, ½ cup currant jelly, ¼ teaspoon cloves, ¼ teaspoon ginger and whole cloves.

Combine vinegar, honey, butter, jelly and spices in small sauce pan. Simmer over low heat for 5 minutes, stirring constantly. Cool. Make diamond-shaped pattern by scoring fat side of meat with diagonal slashes. Heat meat, scored side up, in a slow oven, 325°F., 30 minutes. Remove from oven. Place a whole clove at the point of each diamond. Cover with the honey glaze. Serves 10 to 12.

TRAFFIC CONTROL

(Continued from page 668)

praised after more extensive experiments. Present experiments were conducted on a small scale without using control hives for comparison. Furthermore, other experiments were carried on simultaneously in the same hives. It may be said, however, that it has proved to be an interesting novelty that is commercially feasible, and may prove to be of some economic value.

HOLLOPETER'S
Hardy Northern Italian Queens
June-November. Our 50th year
WHITE PINE BEE FARMS
Rockton, Pa.

A FOOTNOTE TO "PREPARATION FOR WINTERING"

(Continued from page 665)

The queen for the upper unit is taken from the battery shipping cage and inserted in the new unit with her regulation queen cage with the paper removed from the candy end of the cage and a match or nail inserted through the candy to hasten the release of the new queen. Let me repeat: these queens are caged minus any worker attendants and we believe the acceptance is better with this practice. The entrance to the upper unit is stuffed with grass or similar material to prevent any flight for a day or so, to give the sealed brood a chance to start hatching and to give the adult bees time to become accustomed to the division. It also prevents robber bees from overpowering the new unit before it becomes established.

We check for queen acceptance a week later, being careful to disturb the new unit as little as possible. When a honey flow develops we super both bottom and top unit as needed until the main honey flow is well under way, when they are then united. This is done by leaving the parent colony on the bottom board, removing the extracting supers, placing a newspaper over the top bars of the parent colony and setting the new unit directly over the parent colony with its own supers in their accustomed place and the supers of the parent colony on top of the stack. In this way the brood is all confined to the bottom of the unit, the upper portion being used for honey storage. From this time it is generally necessary only to add supers at the top of the stack until the honey flow ends. There are exceptions but this rule will hold good in most seasons.

This method is not original and I have borrowed most of these ideas from beekeepers who are much better beekeepers and honey producers than I ever hope to be. Holzberlein, Banker and Schaefer have furnished me with much of the procedure being used in this type of honey production and as time goes on we all make minor changes in our methods.

Requeening Pays Off

There are still many beekeepers who believe that because a queen produces well one season, she will again. There can be nothing further from the truth. Second season queens are more likely to supersede right at the time you need them than a young laying queen. To avoid swarming, do-nothing hives, and winter loss due to queenlessness, requeen regularly with young laying queens. Return mail shipments summer and fall.

STARLINES and MIDNITES

1 to 25	25-99	100 up
$1.30	$1.20	$1.00 ea.

ITALIANS

1 to 25	25-99	100 up
$1.00 ea.	90¢	80¢

Clipped and marked for only 15¢ each additional

York Bee Company

P.O. Box 300 Jesup, Georgia
(The Universal Apiaries)

DADANT'S STARLINE HYBRIDS — **The Strains Preferred by Leading Honey Producers** — DADANT'S MIDNITE HYBRIDS

QUEENS THAT SATISFY

From improved yellow banded Hybrid strain. Marked and clipped unless otherwise specified. Shipped Air Mail for quicker delivery.

1 to 24, $1.10 25 up, $1.00

No packages please.

S. C. SQUIRES

P.O. Box 566 Chapel Hill, N. C.

Beeswax Rendering Service

Exchange Your Beeswax for Foundation

Write for Price List.

WAX WORKERS, INC.

1330 Slaterville Rd. Ithaca, N. Y.

When Answering Advertisements, Please Mention GLEANINGS IN BEE CULTURE

ITALIAN & CAUCASIAN BEES AND QUEENS 1960 PRICES

Bees that stand test for Honey Gatherers, Gentleness, and very prolific. Bred from select hives, Fumidil fed grafting and queen yards. A certificate of health and live delivery guaranteed. All queens Air Mail. Tested Queens, each, $2.50.

	2 Lb.	3 Lb.	4 Lb.	5 Lb.	Queens
1 - 24	$4.50	$5.50	$6.50	$7.50	$1.45
25 - 99	4.25	5.25	6.25	7.25	1.35
100 - up	4.00	5.00	6.00	7.00	1.25

We are prepared to fill all orders promptly. Come after your bees or have them shipped Express or Parcel Post. Send $1.00 per package deposit, balance two weeks prior to shipping date. Parcel Post, add for 2 Lb. $1.30; 3 Lb. $1.50. Larger packages add $2.50.

SEND US YOUR ORDER FOR 1 or 1,000 — TRY US.

G. D. McCARY & SON BEE CO. BUCKATUNNA, MISSISSIPPI

Queens

Let Us Thank You
One and All
for the
Package Bee and Queen Business
which has made our 1960
operation a success.

We will be in business
next year with
ISLAND HYBRID
and
REGULAR ITALIAN QUEENS
heading our Packages,
that do the job.
"They Produce"

Rossman Apiaries

P.O.Box 133 Moultrie, Ga.

Booking Orders — NOW for 1961 Package Bees

Headed by vigorous
CAUCASIAN QUEENS
or
DADANT'S MIDNITE
HYBRID QUEENS

Over 30 years' experience with this gentle, winter hardy race of bees.
Prices on request.

HOWARD WEAVER & SONS
Navasota, Texas

No Matter What Your Interest

Whether you are a Commercial Beekeeper; a Sideline Beekeeper; or a Beginner Beekeeper,—you'll find what you want in ABJ. PLUS Science and Industry; Honey Plants; Meetings; Crops and Markets—AND your questions answered FREE. Send for a sample copy.

American Bee Journal
HAMILTON, ILLINOIS

The Australasian Beekeeper

The senior beekeeping journal of the Southern hemisphere provides a complete cover of all beekeeping topics in one of the world's largest honey producing countries. Published monthly by Pender Bros. Pty. Ltd. Box 20, P. O., Maitland, 3N, N.S.W., Australia. Subscription by Bank Draft or International M.O. Australia and New Zealand 16/- per annum (in advance) post paid. British Isles and British Dominions 20/- per annum (in advance) post paid. Other overseas countries 23/-per annum (in advance) post paid. Sample copy free on request.

Leather Italian
QUEENS
for '61

You too may have better locations than you thought.

O. K. Anderson & Son

Box 516
Coffee Springs, Ala. U.S.A.

BALL CLOVER

(Continued from page 685)

more honey from Ball than from White Clover.

I have observed this clover for several seasons now. It blooms from the first part of April to early June, usually lasting about seven or eight weeks. I always find four or five times as many honeybees, by area, on it, than on White or Crimson nearby. In a pasture planted with White, Crimson, and Ball in different blocks, I have counted 840 mature blooms per square yard on Ball, 315 on White, and 300 on Crimson. These were averages of different counts. This was in Loessial Hill soil with about four inches of top soil, limed and fertilized by soil sample laboratory recommendations.

One plant examined had 19 main stems and 116 blooms all ages. One Ball flower had 38 florets (averages). Every honeybee caught and examined while the plant was in full bloom had nectar in its sack.

So far I haven't been able to get a sample of the honey. In this area my bees store their surplus during April and May, and work not only the clovers, but numerous trees, shrubs and vines. The only honey I have ever extracted nearly pure is Rattan vine. My bees will leave everything for Rattan (weather permitting). The highest gain I've had was 48 pounds in four days once from Rattan, and one year 19 pounds in one day, but that's another story.

I would appreciate hearing from anyone with Ball Clover honey.

GOOD-WILL MARKETING

(Continued from page 655)

Obviously, the marketing of honey, like any other commodity, is a cooperative service. This service is divided among the beekeepers, the jobbers and the distributors to put honey on the market in a form and at a price most acceptable to the public, and at the same time allow a reasonable profit for all the agencies involved. The degree to which any marketing program may be successful will depend largely upon the enlightened regard that each agency concerned has for maintaining high ethical standards in their dealings with each other, and for their regard for maintaining a standard of perfection for all honey products. Any such cooperative service may rightly be called "Good-will Marketing".

A SURVEY OF AMERICAN HONEY PLANTS

(Continued from page 688)

as per cent formic acid. We now know that there are many acids in honey, with formic acid being one of the least important. Since we have recently found a sugar acid, gluconic acid, to be the principal one in honey, these results could be expressed as "per cent gluconic acid" by multiplying the numbers in the table by 0.0196. Actually there are many acids in honey, so we have used the term "milliequivalents per kilogram" to avoid implying that only one acid is found in honey. This figure is such that it properly expresses the acidity of a honey sample independently of the kind or kinds of acids present.

(Next month:- Characterization of individual floral types of honey.)

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85¢ each or $8.00 per 10
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THE BATTLE OF THE BUMBLEBEES

(Continued from page 665)

hurled themselves in vain. For every Caucasian bee they dragged forth, another promptly scuttled forward to fill the gap. Finally the bumblebees left the blacks alone and massed for the all-out assault on the Italians.

When I pulled down the hives again hours later to check for my queens, I found the frames choked with Italians and wild bees, invader and defender locked in a death grip. In one hive, a terrific battle was still going on as trapped bumblebees fought to the last.

I can look back on it now and laugh as I think of the picture I made, flailing away with my spruce bough. But it was serious enough then: with the threat of the possible extermination of one or more of my colonies, the loss of the honey stores, and the painful reaction to me if the wild bees got under my clothing or my veil. My own bees never bothered me during the fight. Could they have possibly known that I was on their side?

Chum, my brave Labrador, remained under the bed during the battle. When I looked for him, he was back under the bed as far as he could crawl, his nose buried deep between his forepaws. It took some coaxing to finally lure him out of the house. He was very wary as he peered out, his ears cocked, his black nose twitching as he scented the breeze to learn if all was clear.

And yet he deserves a medal. But for his keen ears, I might not have learned of the bumblebee raid until the damage had been done. I shall have to find some way to reward Chum. It's a pity he doesn't like honey.

RESEARCH REVIEW

(Continued from page 669)

and medium red clover. Observations in 18 fields showed that honeybees were more important than bumblebees in second crop pollination but that individual bumblebees were more efficient than individual honeybees.

Peterson, A. G., B. Furgala and F. G. Holdaway Pollination of red clover in Minnesota. Journal of Economic Entomology 53:546-50. 1960.

LEARNING THE HARD WAY

(Continued from page 661)

one of the supers and part of the other by late fall. Now it was time to winter them. Oh, I was so solicitous. I filled a sack with leaves and inserted it in an empty super over the inner cover with the outer cover on top; I piled leaves around three sides of the hive. This last thing was my undoing, although I didn't realize it until spring. The winter rains and snow saturated those leaves and then they froze, encasing the hive as in a deep freeze. My poor bees froze to death in the midst of plenty.

But by now, I really had the "bee bug" and, as it turned out, this lack of success the first year was actually a sort of blessing in disguise. I had now learned what not to do, and I could hardly wait for my new package of bees to arrive so that I could make amends to both them and myself. Then too, how could I fail this time. I had the blessings of my wife.

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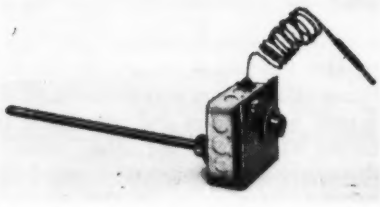

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